

ROTARY SLOPE MOWER



Operation manual

Spider MINI

revize 02-01-10-2011



Product serial number :

Engine type :

Engine serial number :

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1. INTRODUCTION

1.1. **IMPORTANT**



This is a precision machine and the service obtained from it depends on the way it is operated and maintained.

This OPERATION MAUAL should be regarded as part of the machine and should always be present at the machine and available to the operator. Suppliers of both new and second-hand machines are advised to retain documentary evidence that this manual was provided with the machine.

This machine is designed solely for use in customary grass cutting operations. Use in any other way is considered as contrary to the intended use. Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential element of the intended use.

Before attempting to operate this machine, ALL operators MUST go through a practical training in machine usage, read through this manual and make themselves thoroughly conversant with Safety Instructions, controls, lubrication and maintenance. The machine may be operated with additional accessories specifically designed for this purpose. Operating and Safety Instructions of such accessories must be strictly adhered to.

Accident prevention regulations, all other generally recognized regulations on safety and occupational medicine, and all road traffic regulations shall be observed at all times.

Any arbitrary modifications carried out on this machine as well as non-adherence to this OPERATION MANUAL may relieve the manufacturer of liability for any resulting damage or injury.

In several places this Manual contains instructions for safe work. If the text includes such an instruction, then the instruction is marked by the following WARNING symbol:



Warning against a highly probable danger of severe injury or life threat if appropriate instructions are not followed.

Other symbols:



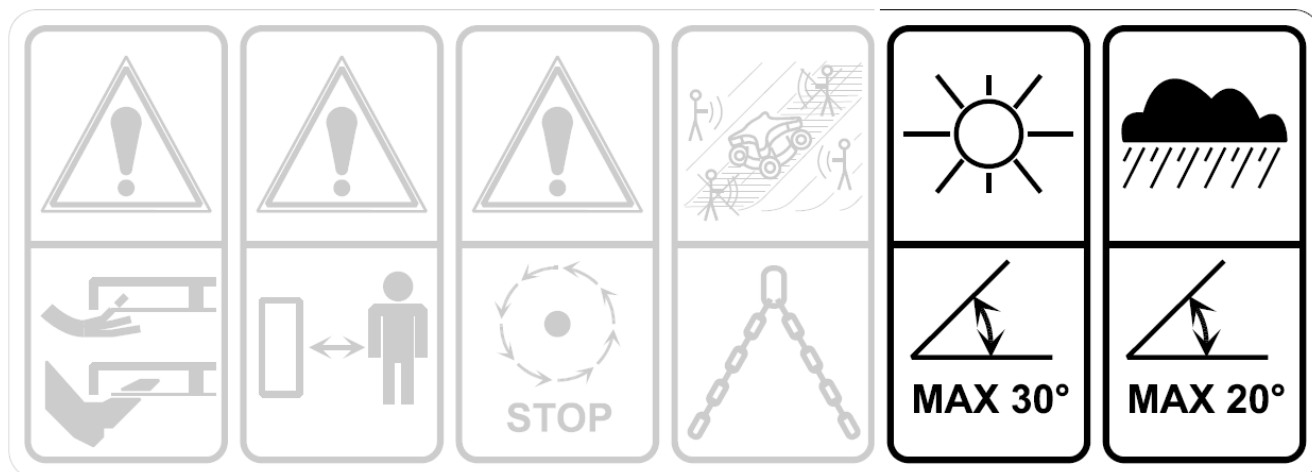
Provides useful information

1.2. MACHINE USAGE

The machine is designed for the mowing of grass on level as well as steep terrain. Any other use is prohibited. The maximum slope on which the machine may be used depends on the current condition of the area to be mowed:

Dry conditions: 30°

Wet conditions: 20°.



Spider is a mulching mower designed for mowing of well maintained as well as unkempt or only occasionally mowed areas. The mower is operated by one person using radio control.



The mower may only be operated by authorized persons over 18 years of age both mentally and physically fit, who are familiar with this Operation Manual and all applicable regulations and laws pertaining to work health and safety that need to be observed while operating the mulching mower Spider.

1.3. **PROHIBITED USE**

- The mower may not be used for other purpose than for which it was designed and which is described in chapter 1.2.
- The mower may not be used on surfaces littered by glass, loose stones, pieces of iron and other foreign objects that can either be thrown by the blades during mowing or damage the mower
- The mower may not be used on slopes exceeding 20 degrees when wet or foggy as the climbing ability and mower stability are adversely influenced by poor ground adhesion. During favourable climatic conditions (dry surface, good visibility) the mower may not be used on slopes exceeding 30 degrees.
- The mower may not be used where other people, children or animals can be found within 20 m (65 ft.) from the mower/mowed area.
- **Never use the mower unless you are properly acquainted with the terrain and mainly with the occurrence of undesired terrain irregularities, stumps, swamps, pits, unstable and poor load bearing soil etc.**
- The mower may not be used as a towing/transporting device or as means of transporting persons.
- It is prohibited to drive the mower on public thoroughfares
- It is prohibited to increase the engine revolutions or the engine performance above the limits specified by the manufacturer. It is also prohibited to make any other modifications to the machine construction or to the engine setup. The manufacturer does not bear any liability for damage or injury resulting from such modifications.
- It is prohibited to use the mower under the influence of alcohol or drugs
- It is prohibited to drive the mower into heaps of sand, gravel or similar material, on stumps, rocks, construction elements or any other obstacle, which may compromise the stability of the machine
- It is prohibited to use the machine under low visibility (dusk, fog, heavy rain etc.)
- It is prohibited to use the mower unless the operator is familiar with the Operation Manual
- It is prohibited to dis-/engage the blade drive and adjust the height of cut while the engine is running
- An intermittent acoustic signal (beeping) informs the operator that the mower has reached a dangerous incline and threatens to roll over. It is prohibited to use the mower on slopes while the mowers beeps and indicates its dangerous incline.

1.4. **PRODUCT IDENTIFICATION**

The mower can be identified by the serial number, which can be found on the factory label placed on the mower deck. The serial number and the year of manufacturing must be provided during every request for servicing and with every order of spare parts. On the internal engine you can also find the engine manufacturer’s factory label.

| Location of engine factory label | Location of mower factory label |
|---|--|
|  |  |

1.5. GUIDELINES FOR THE DISPOSAL OF SCRAP PRODUCTS

When it has been identified that a turf care product has no further functional value and requires disposal, the following actions should be taken.

These guidelines should be used in conjunction with Health, Safety and Environmental legislation and use of approved local facilities for waste disposal and recycling.

- Position the machine in a suitable location for any necessary lifting equipment to be used.
- Use appropriate tools and Personal Protective Equipment (PPE) and take guidance from the technical manuals applicable to the machine.
- Remove and store appropriately:
 1. Batteries
 2. Fuel Residue
 3. Oils

Disassemble the structure of the machine referring to the technical manuals where appropriate. Special attention should be made for dealing with “stored energy” within pressurized elements of the machine or tensioned springs.

Any items that still have a useful service life as second hand components or can be re-serviced should be separated and returned to the relevant centre.

Other worn out items should be separated into material groups for recycling and disposal consistent with available facilities. More common separation types are as follows:

- Steel
- Non ferrous metals
 - Aluminium
 - Brass
 - Copper
- Plastics
 - Identifiable
 - Recyclable
 - Non recyclable
 - Non identified
- Rubber
- Electrical and electronic components

Items that cannot be separated economically into different material groups should be added to the “General waste” area.

Do not incarnate waste.

Finally update machinery records to indicate that the machine has been taken out of service and scrapped.

Always adhere to local legislation.

2. SAFETY INSTRUCTIONS



This safety symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury, carefully read the message that follows, and inform other operators.

Safety Instructions

- Do not enter or reach under the machine if it is lifted and not sufficiently supported. The machine should be supported on places marked by the symbol of a chain.
- The mower should only be transported in a container or on a trailer.
- Check bolt torques at regular intervals. The first check should be done after 8 operating hours. Pay attention to the attachment of the cutting blade and the proper bolt torque. Use a torque wrench and a specified torque of 60Nm.
- The blade hub bolts and the blade bolts must not show any signs of damage or wear. The bolts must be complete. The blade must be undamaged, evenly worn and adequately sharp. The bolts should be tightened with a torque of 60Nm.
- If you are driving the mower outside the working area with disengaged blades, always set the maximum height of cut otherwise the blade may get damaged.
- Keep the product clean after use. Do not use gasoline or similar oil products for cleaning.
- Do not reach with your hands or feet inside the mower, under the mowing deck, under the engine covers or into the transmission system.
- If you are forced to reach under the machine, wait until all rotating parts (including the engine) stop. Attention, it takes some time before blade runs down! The run-down time depends on the state and wear of the brake/clutch. Have the brake checked at regular intervals at an authorised servicing facility.
- While operating, wear closed shoes and work clothing. Do not wear loose clothes that could get caught by the machine, short trousers or light shoes.
- A local risk assessment should determine the need for a face shield.
- Do not operate the machine after drinking alcohol or using medication influencing perception.
- Before starting the engine make sure that the mower blade is engaged (for mowing operation) or disengaged (for transport). The blade may be dis-/engaged and height of cut adjusted only if the engine is shut off. When starting the engine always step aside far enough to be protected against object accidentally thrown from the mower and to be able to stop the mower in case of an emergency. Do not enter the path of the mower.
- While operating the mower make sure that the mower is clearly visible at all times and within the range of the remote control unit and that you can clearly recognize dangerous situations and react to them properly. Do not abuse the maximum reach of the remote control.
- When using the mower, follow all general work safety regulations.
- Work with the mower may only be started if the mower is not damaged by previous operation.
- Do not change the engine tuning, especially the engine speed regulator. Do not modify the exhaust pipe.
- Do not use the mower if there is less than 30% of fuel in the fuel tank.
- Do not move the mower by means of towing it behind another machine.

Operating Environment

- The machine should only be used by persons over 18 years of age, who have been acquainted with the machine and the user's manual. The remote control (further referred to as "RC") is considered a part of the machine
- The user's manual must be stored in a place permanently accessible to the operator and must be available to him at all times.
- Do not allow children or unauthorised persons use the product.
- Before starting to operate the machine, you have to be familiar with all the symbols next to the controls and indicators used on the mower and the RC.
- Pay special attention to the stopping and shutting-off of the engine and to the emergency shutting-off of

the mower.

- Before using the mower on a slope, make sure you test and practice your mower-control skills on flat and level ground, which is sufficiently free and spacious. Master how to control the movement on a surface, to mow around bushes, trees and other terrain elements and obstacles.
- If you stop the mower on a slope, position the wheels across the slope and secure it against undesirable movement by the means of the emergency brake.
- While operating or transporting the mower, the operator must always have the mower in their view. The maximum distance between the operator and the mower is 50 m /165 ft.
- While using the mower follow all safety regulations given in this manual and respect local regulations and provisions concerning noise-emissions, especially when using in hospitals, spas and other sensitive areas.
- The operator must pay attention to the area into which the mulched grass may be blown. Neither the operator, nor any other persons, children nor animals should be allowed to enter this area. If mowing uneven terrain the ejection and throwing of undesirable objects becomes more probable due to the displacement of the mowing device (tilt of one side of the machine) while crossing the edges of different terrain.
- The operator of the machine may be responsible for any damage caused to third parties by operating the machine.
- The mower may be used on dry surface on slopes listed in chapter 1.2.
- Before operating the machine, make sure you remove from the mowing area all loose stones, sticks, glass, wire, bones, branches and all other objects that can be picked up by the blades and thrown or that could damage the mower.
- While operating the mower avoid obstacles, do not drive over higher obstacles (such as stones, stumps, brick), near precipices, on unstable soil or in places where the mower could fall down or flip over.
- When operating pay attention to electric power lines especially when driving beneath electric wires where the radio signal may be lost. In such case the mower immediately shuts off the internal combustion engine and stops all movements.
- When using the machine near busy thoroughfares make sure that the mower does not endanger (by throwing undesirable objects) passers-by or their property. Choose a suitable working procedure (see chapter: Operating the mower).
- The operator/user is responsible for the safety of persons that enter the working area of the machine. Stop your work if these persons enter the working area.
- The transportation of persons, animals or loads on the mower is prohibited.
- Do not place any objects or tools on the product.
- While operating, especially in windy conditions, choose the operator's position carefully so as to keep the operator away from the stream of exhaust gas, dust or mulched grass.
- Stop work and clean the machine and its cooling surfaces several times while working in dusty conditions to avoid over-heating during operation. If necessary, clean the machine and its cooling surfaces several times while working. The dust layer must not exceed 1 mm.
- Refuel only when the machine is off – before operating, if possible – and the fuel tank is cold. Always keep at least 30% of the fuel in the tank. If you need to refuel during your work, do not fill the fuel into a hot tank or while the engine is still hot. Let the machine cool down.
- Do not overfill the fuel tank.
- Never refuel while the engine is running.
- Before refuelling push the STOP button on the control panel of the mower.
- Do not start the engine if you find spilled fuel, open vessels with fuel or other combustible objects or gases in the immediate proximity of the mower.
- Do not refuel near open fire.
- Do not place this product near open fire or other sources of heat.
- While operating or immediately after shutting the machine off do not touch those parts of the machine that heat up during operation. This concerns mainly the engine exhaust pipe, metal parts of the hydraulic drive and metal parts of the internal combustion engine.
- While operating do not touch the high voltage conductor leading to the sparking plug.

- After starting the engine, test the correct functioning of the emergency engine stop on the radio transmitter. This function should be checked at least once during every shift and every time you enter a new area for mowing or mulching.
- Before starting your work test the correct functioning of the safety components (EMERGENCY STOP) on the mower.
- Never leave the engine running without supervision.
- If the engine is running, do not put aside the transmitter and do not touch or move any parts of the machine.
- Always stop the engine when leaving the machine, secure it against starting by pushing the red EMERGENCY STOP button on the control panel of mower and by removing the key. Never leave the transmitter next to the mower, but put it in a different, properly secured place inaccessible to third persons.
- Do not engage the mowing blade until immediately before mowing and only when the engine is turned off.
- Shut off the engine and disengage the mower blade and remove the key from the ignition every time:
 - You clean the machine
 - You remove dirt from the mower deck (grass or debris)
 - You run over an unknown object and need to check for possible damage or to carry out a repair
 - The machine unusually intensively vibrates and you need to find the cause
 - You repair the engine or other parts of the mower (also unplug cables from spark plugs).
- While operating, avoid mole-hills, concrete bases, guard-stones, stumps, loose stones and curbs. These must not come into direct contact with the blade as they could cause serious damage. Do not drive the mower into heaps of sand, gravel or other material. These may also compromise the mower stability.
- The mower may only be operated during daylight or under very good artificial light conditions.
- Do not use the mower in limited visibility (dusk, fog, heavy rain etc.)
- Do not let the engine run in enclosed spaces. The exhaust gases contain CO. They damage health and can ultimately cause death.
- The engine should only be started and operating in open spaces. If the engine is started and operated in enclosed spaces, the exhaust gases must be conducted away by the means of prolonging the exhaust pipe outside the enclosed space. Proper ventilation and fresh air supply must be secured in order to prevent the accumulation of CO.
- Before storing the machine in a closed space, let the engine and the hydraulic drive of the machine cool properly.
- Regularly remove all combustible objects (dry grass, leaves...) from the areas around the exhaust pipe, engine, alternator and battery. Cleaning may only be performed when the mower is turned off.
- Always control the machine from a working station, which gives you a perfect view of the whole working area and of the machine.
- While working, change your working position to have a perfect view of the mower at all times.
- When operating the mower on slopes never enter the space directly below the mower or the area to which the mower could fall.
- The working position should be far enough (maximum 50 m / 165 ft.) to prevent the operator from getting hit by objects that may be accidentally thrown by the mower.
Do not operate the mower if you cannot see it (behind terrain obstacles, corners of buildings, hidden in grass etc.)

Safety Decals

- Before starting the mower, check the state of the safety labels. If any labels are damaged or missing, contact your dealer and replace such labels on the machine. Get thoroughly acquainted with these labels. The placement of the labels on the machine is obligatory.
- Do not remove or damage any of the safety labels.
- Do not remove any covers or safety elements. They are for your protection.
- Do not use the machine if any of the protecting devices or covers is damaged or missing.
- Keep the machine and its accessories clean and in a good technical condition at all times.

- It is strictly prohibited to make any changes or modifications to the machine that were not previously approved by the manufacturer. Any modification to the machine may lead to a hazardous situation or injury. If these instructions are not followed, the manufacturer does not bear any liability for the machine and the terms of warranty may be invalidated.
- The machine must always be equipped with all covers and protective elements.

3. SPECIFICATION

3.1. SPECIFICATION

TECHNICAL DATA

The mower is a self-propelled machine with all-wheel drive controlled by the transmitter (remote radio controller) signal. Its unique wheel-steering technology ensures a high manoeuvrability both on level ground and on slopes. The basic part of the machine is formed by a square solid frame, which is connected with a sliding frame. The middle part of the sliding frame carries all driving components such as the engine, the hydraulic drive, oil cooler the control unit. 1 mowing blade is attached to the bottom part of the sliding frame. A clutch is placed between the engine and the blade hub. The wheels are driven by a hydraulic motor through chains gears. The wheels are steered by an electric motor. The control unit is placed under the main cover of the machine. The mower is controlled by a multi-channel transmitter.

| Parameter | Unit | Value |
|---|-----------------|--|
| Length/Width | mm (inch) | 910 x 1040 (36 x 41) |
| Height | mm (inch) | 600 (23,6) |
| Mowing width | mm (inch) | 560 (22) |
| Mowing blade height | mm (inch) | 40 – 90 (1,5 – 3,5) - 6 levels |
| Weight | kg (pound) | 125 kg (275) |
| Driving speed | km/h (mph) | 0 – 4 (2,5) |
| Mower deck | - | Single blade with a firm blade attached to a clutch flange |
| Blade clutch | - | Mechanical with a friction brake |
| Hydraulic pump | | Hydro Gear PC |
| Hydraulic motor | - | Sauer Danfoss OMM20 |
| Drive system | - | 4 x 4 |
| Wheels | inch | 13 x 5,00 – 6 with V-pattern |
| Battery | | 12 V, 18 Ah, gel |
| Fuel | - | Unleaded petrol / gasoline |
| Fuel tank capacity | litre (gallon) | 4 (1) |
| Engine | | Briggs&Stratton 850 SERIES I/C ECO PLUS |
| Cylinder volume | cm ³ | 190 |
| Power output | HP/min-1 | 6,5 /3600 |
| Torque | N.m/min-1 | 11,5 / 3060 |
| Ignition | | Electronic |
| Electric | | Electric |
| Frequency range of the Remote controller NBB for EU and USA | MHz | 433.100 - 434.750 |

3.2. NOISE EMISSIONS

The mower emits the following noise:


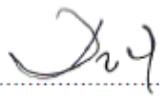
Sound pressure level $L_{WA} = 95,2 \text{ dB}$
 Guaranteed sound pressure level $L_{WA} = 96 \text{ dB}$

The measuring was carried out in conformity with EN ISO 3744 at the engine working RPM (3000 min⁻¹)

Noise at operator's station (ear): $L = 77 \text{ dB (A) Leq}$ – measured in the distance of 1 m from the machine according to EN 11201

Uncertainty of measurement $U = \pm 0,8 \text{ dB}$

3.3. CONFORMITY CERTIFICATES


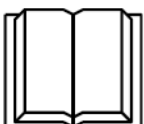

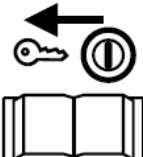








| EC DECLARATION OF CONFORMITY | | |
|--|--|--|
| We manufacturer | DVOŘÁK - svahové sekačky s.r.o. Kyjov - Dvorce 62 580 01 Havlíčkův Brod VAT ID: 26013797 | |
| declare that the product | name: Slope applicable rotary mower model: SPIDER MINI designed for: mowing of grass areas serial number: | |
| | fulfils all the relevant provisions of Directives | |
| | Directive 2006/42/EC – machinery Directive 2004/108/EC - EMC Directive 2000/14/EC - noise Directive 2002/88/EC, 97/68/EC | |
| List of technical standards, specification and harmonised norms used for review of its conformity: | EN ISO 13850, EN 953 + A1, EN 1175-2, EN ISO 4413, EN ISO 13849-1, EN 1005-3 + A1, EN ISO 11201, EN ISO 3744, EN ISO 12100, EN ISO 3767-1,3, EN 13478 + A1, EN 55012, EN 836 + A1 + A2 + A3, ISO 11684 | |
| Description, basic technical specification | | |
| Parameter | Unit | Value |
| dimension | mm | 910 × 1040 |
| height | mm | 600 |
| mowing width | mm | 560 |
| weight | kg | 125 |
| driving speed | kmph | 0 - 4 |
| engine | - | Briggs & Stratton 850 SERIES I/C ECO PLUS |
| performance | kW/rpm | 6,5/3600 |
| engine speed | rpm | 2700 |
| Conformity assessment in accordance with directives 2000/14/EC, art 14, point 1 | | |
| The person participating in this conformity assessment in accordance with directives 2000/14/EC: | | |
| NB 1017, TÜV SÜD Czech s.r.o., Novodvorská 994/138, CZ - 142 21 Praha 4 | | |
| Measured sound pressure emission level | L _{WA} = 95,2 dB | |
| Guaranteed sound pressure emission level | L _{WA} = 96,0 dB | |
| The person authorised to compile the technical file | Jakub Trachtulec Dvořák-svahové sekačky s.r.o. Kyjov - Dvorce 62 CZ - 580 01 Havlíčkův Brod | |
| In Dvorce on 1. 7. 2011 |  Dvořák-svahové sekačky s.r.o. Dvorce 62, CZ-580 01 Havlíčkův Brod IČO: 26013797 DIČ: CZ26013797 | |
| |  Lubomír Dvořák, CEO | |


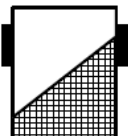


4. SAFETY DECALS

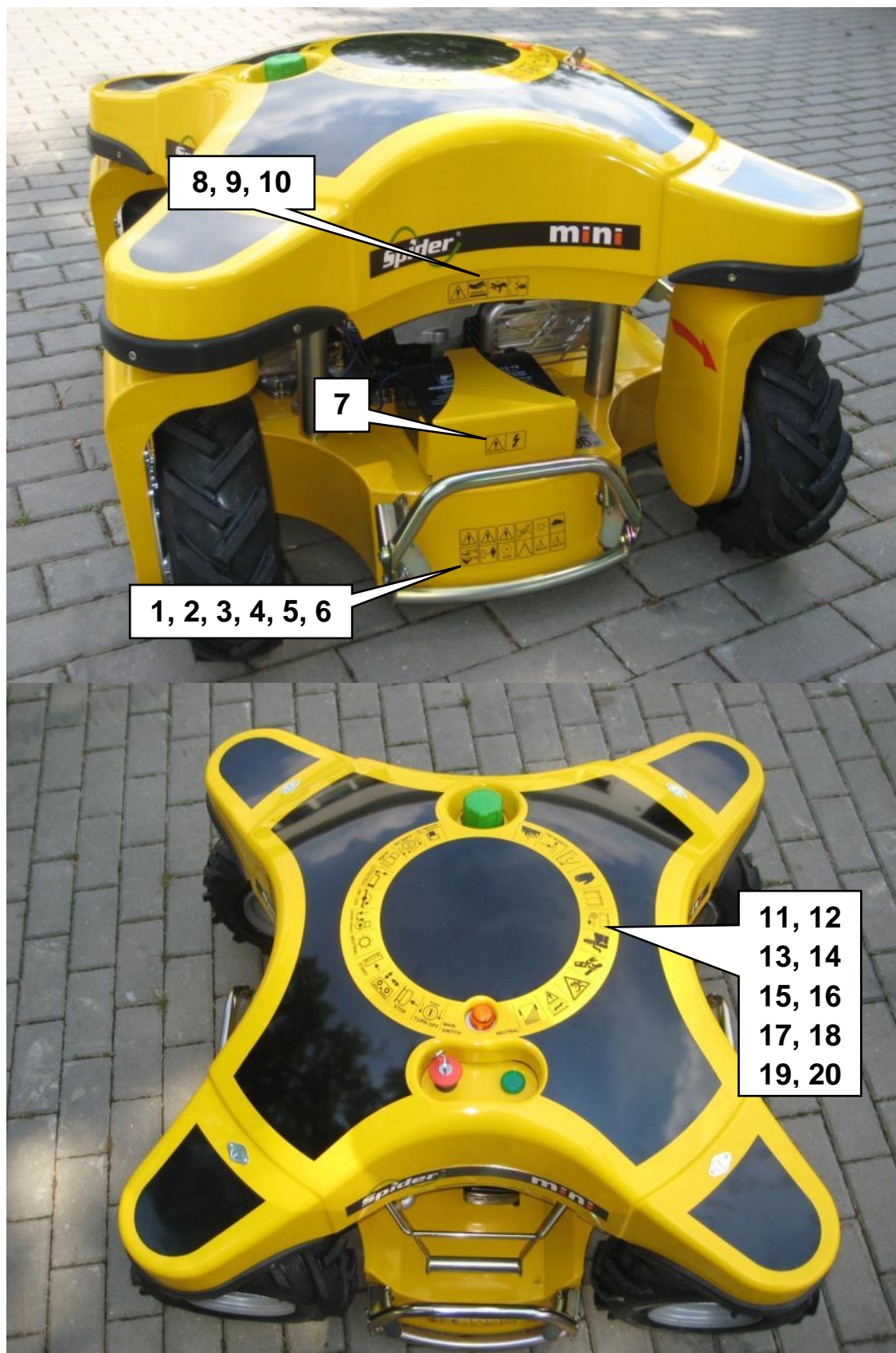
Attention! This machine may be dangerous. Incorrect and negligent use may result in damage, serious injuries or death. Safety and warning decals described in this chapter are placed on important parts of the machine and inform about possible danger. The pictograms explain the nature of the hazard. Understanding their meaning is a precondition for a safe use of this product.

| 1 | 2 | 3 | 4 | 5 | 6 |
|--|--|---|--|---|---|
| | | | | | |
| Attention, danger of hand or feet injury caused by rotating blades | Keep safe distance from the moving machine | Attention, rotating parts are decelerating after they were turned off | On a slope never enter the area below or directly above the machine ----- Slinging point | Maximum permissible slope during dry conditions | Maximum permissible slope during wet conditions |




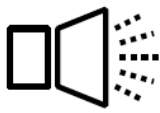
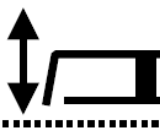

| 7 | 8 | 9 | 10 | 11 | 12 |
|--|---------------------------------------|--|--|---|--|
| | | | | | |
| Attention, electric battery. Attention, electric voltage, danger of short-circuit. | Danger of getting burned by hot parts | Danger of getting caught by rotating parts | Attention, rotating parts. Handle only when they have come to a complete stop. | Before starting close all protective covers | Attention, use protective gloves when changing the mowing blades |



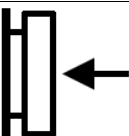

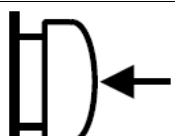

| 13 | 14 | 15 | 16 | 17 | 18 |
|--|--|--|--|--|--|
|   |   |   |   |   |   |
| Read the operation manual before use | While maintaining, repairing or adjusting the machine remove the key from the ignition | It is prohibited to transport people with the machine | Attention, the device uses hydraulic energy drive, danger of injury caused by the hydraulic oil jet. | Attention, danger of getting hit by flying object. Keep safe distance. | While maintaining, repairing or adjusting the machine follow the operation manual |

| 19 | 20 |
|--|--|
|   |   |
| Use protective work aids; face shield | Attention, combustible substance, danger of fire |



5. INSTRUCTION DECALS

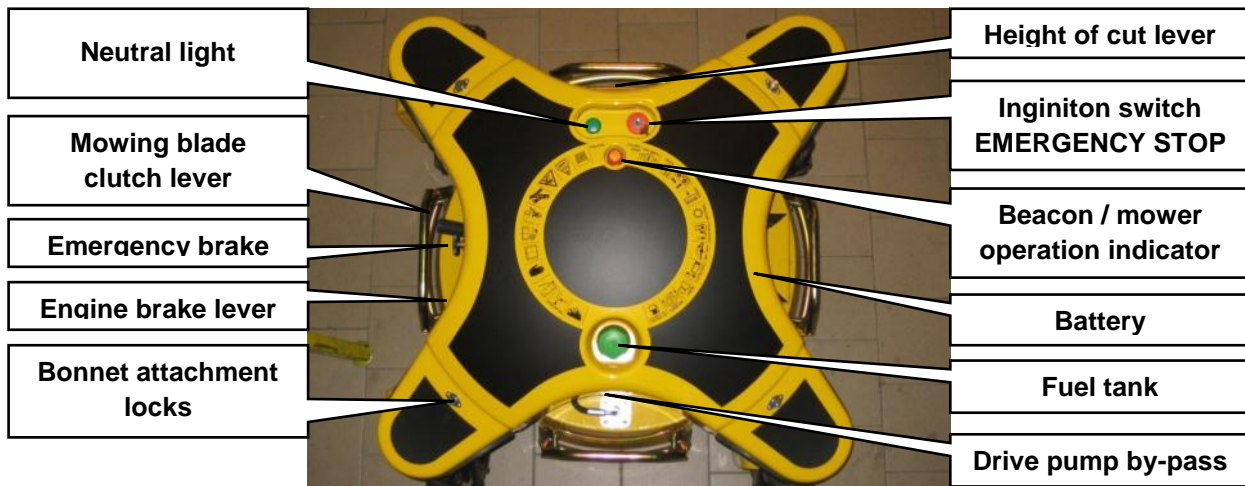
| | | | | | |
|---|--|---|--|--|--|
|  <p>CHECK OIL</p> |  <p>UNLEADED FUEL NATURAL 95</p> |  <p>TURN ON</p> |  <p>HORN</p> |  <p>CUTTING HEIGHT</p> |  <p>ON / OFF</p> |
| Check engine oil level, add oil if necessary | Check fuel level, add fuel if necessary. Use only fuel recommended by the manufacturer | Turn on the mower and the remote control by turning the Emergency Stop buttons | Confirm connection by pressing the horn | Set the required height of cut | Engage or disengage the clutch of the mowing blade |

| | | | | | |
|--|---|---|---|--|--|
|  <p>ENGINE BRAKE</p> |  <p>NEUTRAL</p> |  <p>START</p> |  |  <p>STOP</p> |  <p>TURN OFF</p> |
| Press the level to release the engine brake | For starter activation the drive servomotor must be in a neutral position | Press the start button (Hold for max. 5 seconds. If starting fails repeat after min. 1 minute) | Control the mower by RC joysticks | Stop the mower by pressing the Emergency Stop button on the RC | Turn off the mower by pressing the Emergency Stop button on the mower |



6. CONTROLS AND DISPLAYS

6.1. ON THE MOWER



- Tilt indicator: An intermittent acoustic signal (beeping) sounds when mower reaches dangerous slope.

6.2. ON THE REMOTE CONTROL



6.3. FUNCTIONS OF MOWER INDICATORS

- After unlocking the EMERGENCY STOP button on the mower the beacon starts to flash.
- After turning on the RC, a green light on the RC starts to flash.
- After pressing the confirmation button/horn an acoustic signal (beeping) will sound.
- If the drive servo is neutral position a green neutral light on the mower will illuminate.
- If the RC is turned off, signal interrupted or drive servo displaced (by moving the RC drive joystick) the neutral light will dim.
- After pressing the EMERGENCY STOP button on the mower the beacon stops to flash.
- If a dangerous slope / mower tilt is reached an intermittent acoustic signal (horn beeping) will sound.

7. SAFETY SYSTEMS

7.1. MOWER SAFETY ELEMENTS

The mower is controlled by a radio remote controller. This means that the operator is not permanently near the mower and cannot use the controllers placed directly on the mower. For the safety of the operator as well as other person the following chart lists various situations and protective measures taken:

Command EMERGENCY STOP (automatic or manual) has the following effects:

1. Engine is stopped
2. Wheel steering is blocked
3. Wheel drive is blocked
4. Starter is blocked
5. Engine brake is engaged
6. Ignition is turned off

EMERGENCY STOP command is activated if:

1. mower get out of the signal range
2. radio connection is interrupted / interfered with
3. another machine on the same frequency channel works nearby

A safety block prevents the engine from starting if:

1. there is no connection between the RC and control unit of the mower
2. confirmation button on the RC is not pressed
3. drive servomotor is not in the neutral position
4. engine brake is activated

In case the mower rolls over the engine brake is activated automatically. This ensures quick stopping of the mowing blade.

8. PREPARING THE MACHINE

8.1. MACHINE DELIVERY TO A DEALER OR CUSTOMER



From the manufacturer the mower is delivered with complete fillings of engine oil and hydraulic oil, but without fuel in the fuel tank.

Operator training should take place during the installation of the product and certainly before the operator starts to use the product.

To take the mower off a pallet / crate:

- Place the palette with the mower on a level surface
- Carefully remove the upper boards of the crate and take out all accessories & the remote control. Disassemble the side boards of the crate
- Release the attachment fastening the mower to the pallet, remove transportation wrapping. Recycle these wraps.
- Thoroughly examine the mower for possible damage and missing parts from the delivery. If necessary, contact the transporting company with your claim.
- Before driving down from the pallet raise the mowing mechanism to the upper position
- Place boards in front of the wheels in the direction, in which you expect to drive the mower from the pallet to the ground. Put at least 1 litre/0,3 gallon of fuel to the tank and attach cables onto the battery. While starting, follow instructions in chapter 9.2.
- Slowly move the forward/reverse joystick to correspond with the direction you want to move the mower. The arrow on the wheel legs indicates forward.
- Slowly drive down to the ground and stop the engine
- While unpacking, assembling and preparing the mower, do not engage the mower blade.

Parts of delivery:

- SPIDER mower
- Mower ignition key (X2)
- Gel battery (12V)
- Remote control + 2 x AA battery
- Operation manual
- Remote control key (X2)
- Engine user's and maintenance manual
- Remote control operation manual
- Copy of CE declaration of conformity for the mower
- Copy of CE declaration of conformity for the NBB remote control



During the first start there may be a lack of fuel in the fuel system and the starting procedure may need to be repeated several times. Do not engage the starter for more than 5 seconds. Wait for at least 1 minute between individual attempts to start the engine.



If you have a suitable lifting device available, place the lifting hooks / eyes on spots marked with the chain symbol and lift the mower by about 15 cm / 6 inches, move the pallet away from the mower and lower the mower to the ground.

8.2. HYDRAULIC PUMP BY-PASS

The By-pass is used to disable the hydraulic drive and to engage the oil bypass for manual handling (engine not running) of the machine on flat surfaces. The by-pass should only be used when the hydraulic drive is not functional and the machine cannot be moved. In order to activate the by-pass loosen the by-pass bolt by one revolution. For normal hydraulic drive it is necessary to have the bolt on the pump tightened.



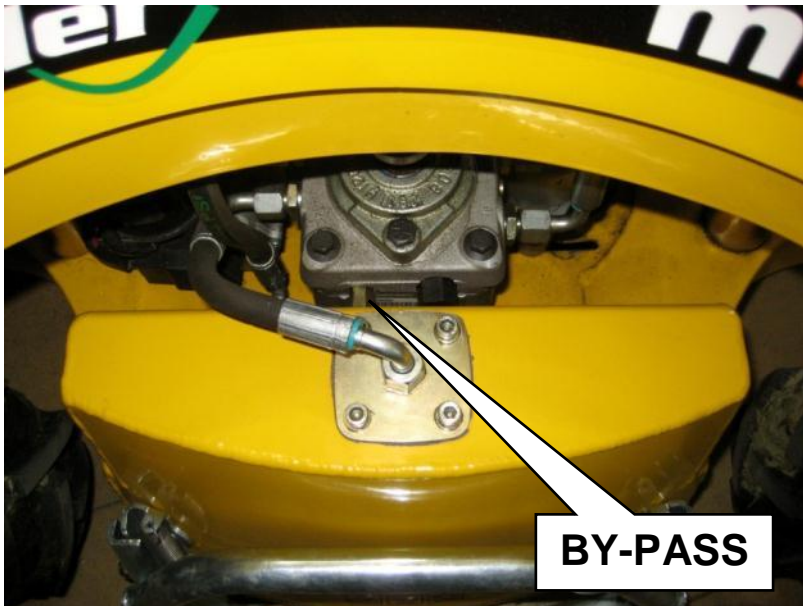
Before starting check the bolt tightness. Loose bolt will disable the hydraulic drive.



Insufficient tightening may result in undesirable behaviour of the mower on slopes. The mower may uncontrollably drive down a slope.



It is strictly prohibited to loosen the by-pass bolt while the mower is on a slope!



8.3. CHECKING ENGINE OIL LEVEL



ATTENTION! Before checking or refilling engine oil stop the engine and let it cool down.

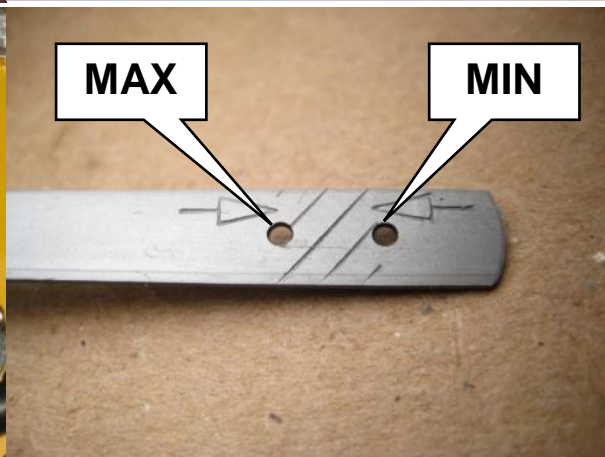
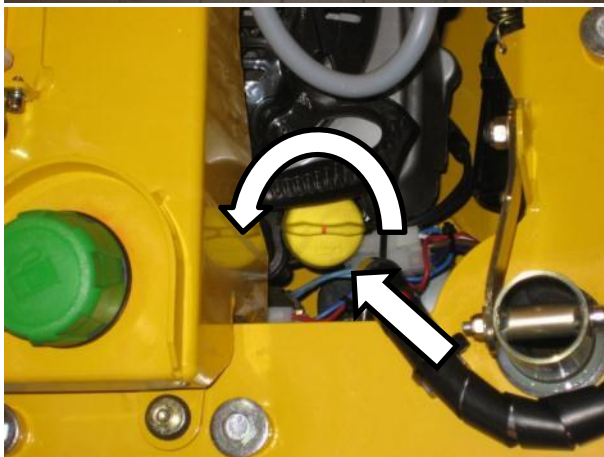
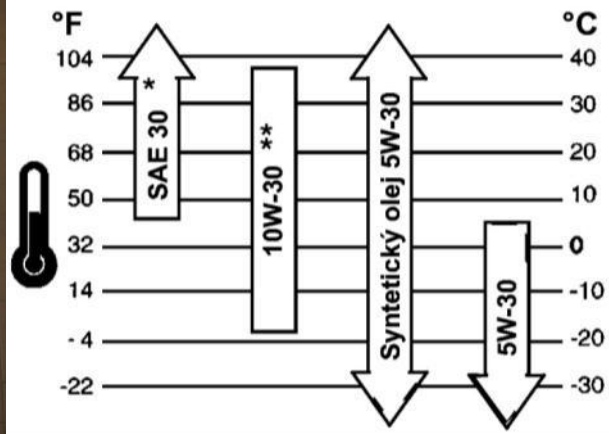
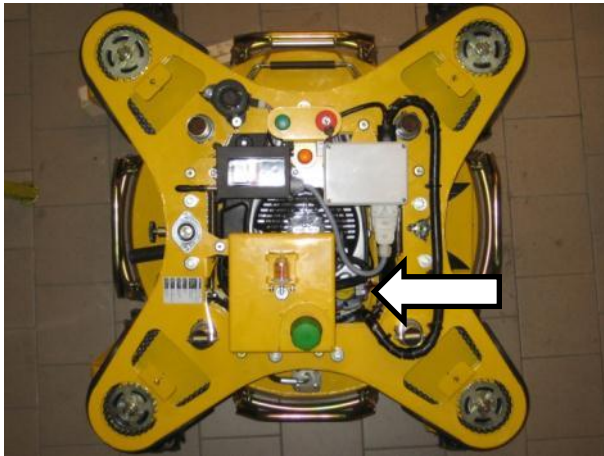
The oil level of the machine standing on a level surface must be between the limit marks on the dipstick (see the engine user's manual). Check oil according to the engine user's manual as follows:

- Place the machine on a level surface.
- Remove the upper cover of the mower. Unscrew the oil cap and clean the dipstick.
- Put the dipstick back into the filler, tighten it and remove it again.
- Check the oil level. If the oil level is close to or under the lower limit mark fill the engine with recommended oil up to the upper limit mark.
- Screw the cap with the dipstick back and tighten it.



Running the engine with insufficient oil may cause serious damage to the engine.

Check the engine oil level on a level surface and only when the engine is off. Use only oil recommended by the engine manufacturer.



8.4. HYDRAULIC SYSTEM OIL

The hydraulic system of the mower is closed and daily checks of oil level are not necessary. However the operator must check the tightness of all components of the hydraulic system. In case of oil leakage caused by the damage to the hydraulic system, have the mower serviced and oil refilled by an authorized service dealer.



8.5. PREPARING THE BATTERY

SPIDER MINI mower uses a gel battery type GiV, 12 V, 18 Ah



Do not fill the battery with electrolyte. The machine construction uses a dry type of battery. If recharging, use a maximum electric current of 1.4 A.

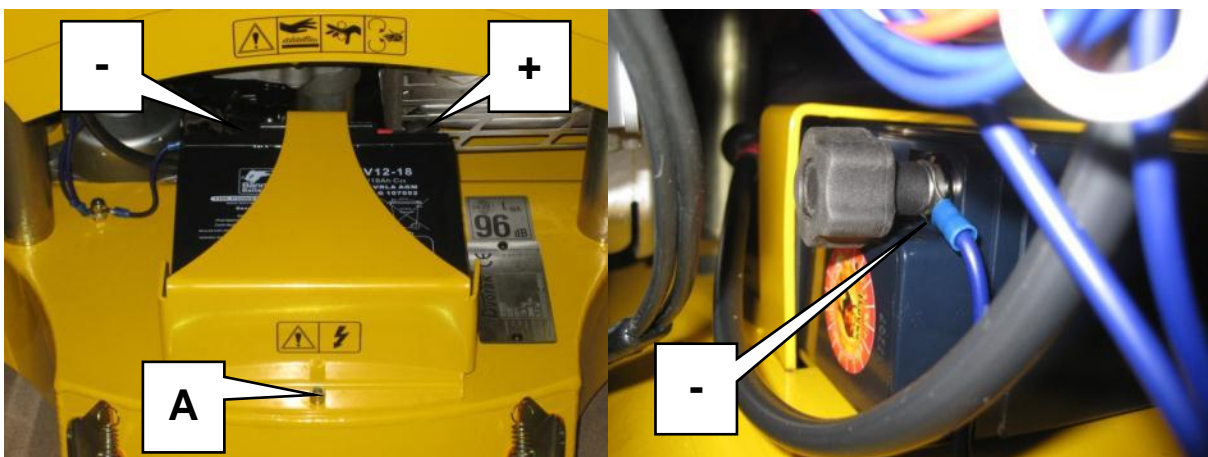
- Loosen bolt (A) and open the battery cover.
- Insert the battery
- Attach back the battery cover.
- Attach terminal connectors according to polarity: first (+) then (-).
- When disconnecting the battery, work in reversed order. First disconnect (-) then (+) battery pole.



Never start the mower when a charger is connected to the battery. FOR CHARGING USE ONLY SPECIAL CHARGERS PREVENTING THE EXCESS OF GASSING VOLTAGE. WHEN CHARGING THE BATTERY MAKE SURE THAT CABLES CONNECTING THE BATTERY TO THE MOWER ARE DISCONNECTED.



It is strictly prohibited to dis-/connect the battery while the engine is running.



8.6. FUEL TANK

The fuel tank is placed on a frame in the upper part of the mower. The fuel tank is closed by a screw cap.

Before refuelling always stop the engine and let it cool down for 10 minutes.

Do not smoke or approach open flames or sources of sparks when manipulating with fuel.

For fuel use 95-octane unleaded gasoline / petrol without any additives. The operator is responsible for all engine or fuel system damage resulting from the use of wrong, low-class, old or contaminated fuel. The warranty does not extend to such damage.

Do not fill the tank near open fire or sources of heat or ignition. Do not smoke while manipulating with fuel. Do

Do not open the tank while it is hot.

Do not fill / empty the tank in enclosed areas.

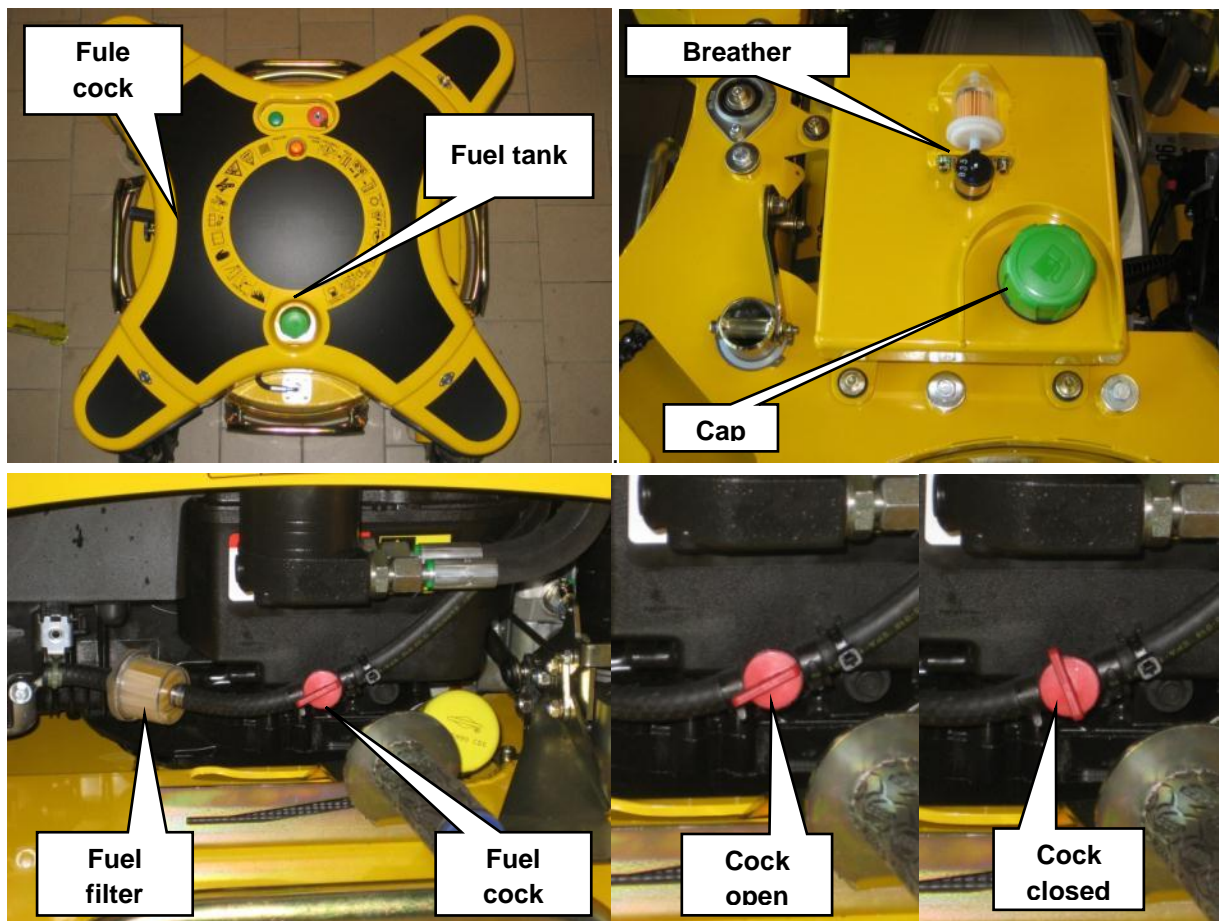
Check the fuel lines, fuel tank, fuel cap, fuel filter, breather system and all linkages for leakage, cracks and dirt. Change parts as necessary.

If fuel is spilled, do not start the engine until it evaporates completely.

Do not overfill the tank with fuel.

The fuel line is fitted with a cock closing the fuel flow to the carburettor and a fuel filter.

The fuel cock must be closed during transport, storage and when tilting the mower to a service position.



8.7. PREPARING THE RADIO REMOTE CONTROLLER

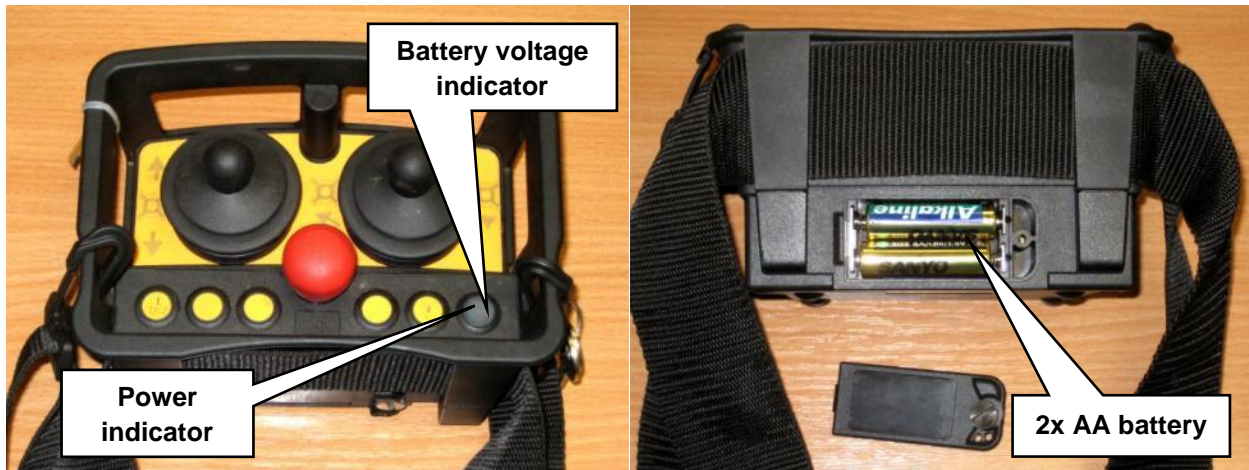
Insert 2 pieces of AA batteries into the radio remote controller. If the power indicator flashes, the battery is charged and ready the RC is for operation.

If the voltage of the radio remote controller drops below a specified level, the whole machine will automatically shut down.

Low RC battery indicator: If the RC battery voltage is too low, the battery light on the RC starts to flash red. Move the mower to a safe place and replace the batteries. After the low voltage light starts to flash you will have about 15 minutes before the RC gets turned off permanently. If batteries are empty, replace them with new ones.



Transmitter (radio remote controller) and receiver (control unit) were adjusted and set-up by the manufacturer. Do not make any modifications to these devices. They are a matched pair.



9. OPERATION

9.1. TRANSPORTING THE MOWER

- The mower should be transported to the mowing area on a trailer or by another suitable transport vehicle.
- Transporting the mower on thoroughfares on its own wheels is prohibited
- When loading/unloading a trailer, make sure that the edge - formed by the floor of the trailer and the ramps – is not an obstacle for the mower. Otherwise you need to use longer ramps.
- When loading, do not allow any person to stand by the ramps or under the hanging mower if it is lifted. It may only be hung upon places marked by the chain symbol. The loading capacity of the lifting eyes/hooks must be suitable for the weight of the machine as quoted on the serial plate.
- After placing the mower on the transport, make sure it is properly secured. Attach fastening devices to the eyes marked by the chain symbol on the mower.
- The mower should only be transported with height of cut set to minimum.
- The fuel cock must be closed during transport.

9.2. STARTING THE ENGINE OF THE MOWER

- Check the fuel level in the fuel tank; refuel with unleaded gasoline / petrol if necessary.
- Check the forward/reverse drive joystick (4) on the RC and set it to neutral position.
- Select desired height of cut by the height adjustment lever.
- Set the mowing blade clutch lever to blade engaged position (for mowing) or blade disengaged position (for transport).
- Push the engine brake lever to disengage to engine brake and active the ignition and the starter.
- Open the fuel cock.
- Release the emergency brake.
- Turn ON the main RC switch (9) by rotating it clockwise.
- A green light (10) will illuminate on the RC.



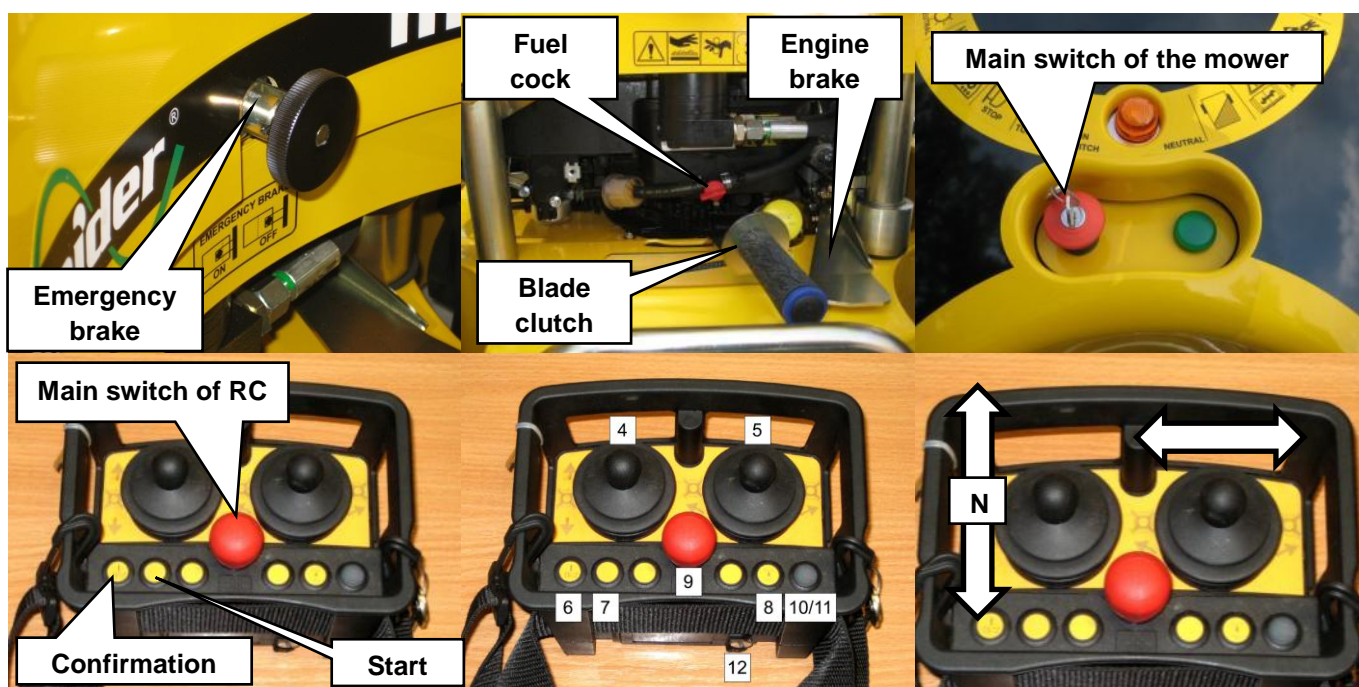
The mower will not start unless switch (9) is in the ON position. If a red low voltage light (11) on the RC is illuminated the mower may not be started until the batteries are replaced for charged ones.

- Use a key to unlock and pull up the EMERGENCY STOP button (1) on the mower. The beacon (3) will start to flash.
- Press the confirmation button / horn (6) on the RC – the mower ignition will be turned on. If the drive servomotor is in neutral position a green neutral light (2) illuminate on the mower.
- If the neutral light fails to illuminate, move the drive joystick (4) on the RC slightly forward and backward until neutral light (2) illuminates.
- Press the START button (7) on the RC for a period of maximum 5 seconds. If the engine fails to start wait for 1 minute and the press the START button again.
- If the engine starts, release the START button (7) on the RC. Do not use the START button again while the engine is running as this may seriously damage the starter.
- Leave the mower idle for about 1 minute. The mower is equipped with an automatic choke which may cause the RPM to fluctuate for some time.



NOTE:

Keep a safe distance from the mower while starting and make sure all covers are fitted.



9.3. SHUTTING OFF THE ENGINE

- Stop the engine by pressing the EMERGENCY STOP button (9) on the remote control.
- Press the EMERGENCY STOP button (1) on the mower and remove the key.

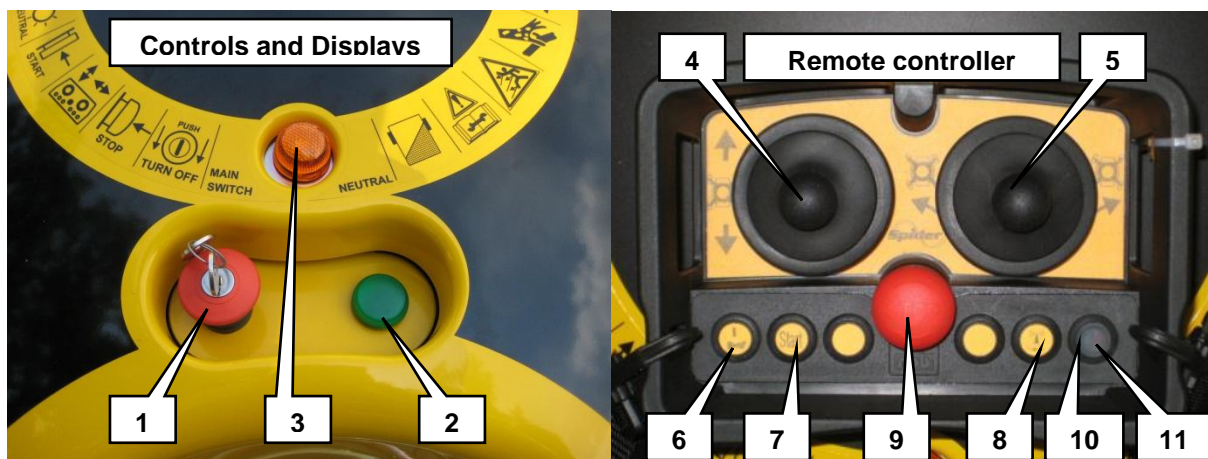
Both buttons have an identical function – activation of the EMERNGECY STOP command (ignition turned off, engine brake activated, starter blocked, communication between the RC and the mower control unit is interrupted). Both buttons are also used as main switches for the RC / Mower.



For emergency shutdown you should primarily use the EMERGENCY STOP button (9) on the remote control. The EMERGENCY STOP button (1) on the mower should only be used if the mower is stable on a flat area or if you are close enough and cannot be endangered by the mower.



EMERGENCY STOP buttons on the remote control (9) and on the mower (1) should be used every time the situation requires an emergency shutdown of the mower.



9.4. ENGAGING THE MOWING BLADES



The mowing blade may be engaged only when the engine is shut off.

- Shut off the engine by the EMERGENCY STOP button on the RC.
- Set the desired height of cut by the height adjustment level on the mower.
- By unlocking the clutch lever and moving it to the left you will engage the mowing blade clutch. The level is held in the engaged position by the clutch springs.
- Turn on the RC and start the mower in a standard way.



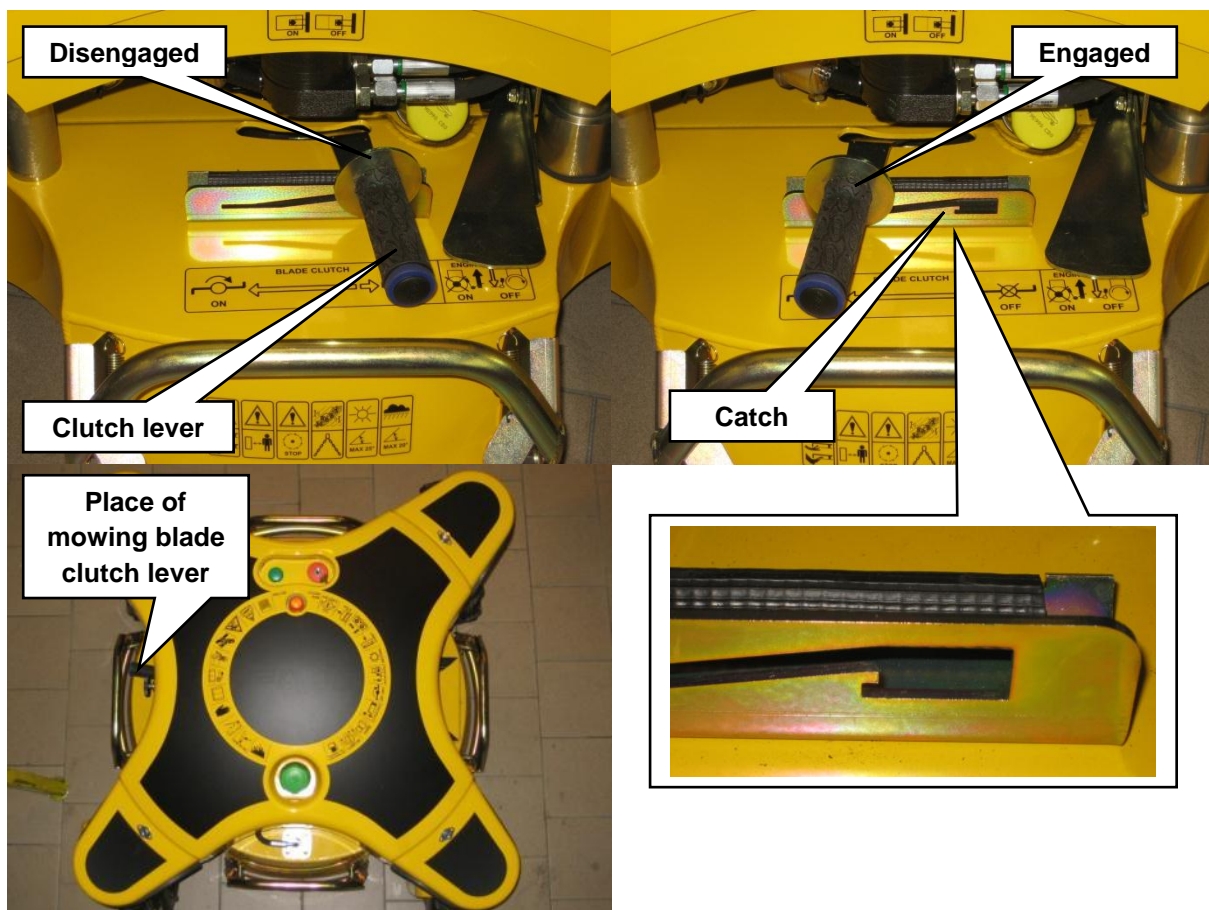
Do not engage the blade in tall grass as this may damage the engine starter. Move the mower to an area without tall grass and then engage the blade.



While starting the engine stay in a safe distance from the mower, away from a possible path of the mower. Do not engage the blade if there are any persons in the working area of the mower. The blade may throw material (rocks, wood, debris...) out from the mower deck.

9.5. DISENGAGING THE MOWING BLADES

- Stop the engine by pressing the EMERGENCY STOP button on the RC.
- To disengage the mowing blade move the clutch lever to the right and lock is behind the catch.
- Turn on the RC and start the mower in a standard way.



9.6. HEIGHT OF CUT ADJUSTMENT

The mower has 6 positions of cutting height adjustment. The height of cut can be adjusted within the range of 40 to 90 mm (1,5 to 3,5 inch).

The height of cut can be adjusted by the height adjustment lever on the mower. The height of cut may only be adjusted when the engine is shut off.

To change the height of cut hold the height adjustment lever in the current position, unlock the latch, move the lever to the desired position and lock it by releasing the latch. Then release the height adjustment lever.



The height adjustment system of the mower is supported by a strong spring, which reduces the power needed to change the height of cut. The height should only be adjusted when the mower is standing on all four wheels. Other position of the mower may cause the height adjustment level to shoot down when unlocked.



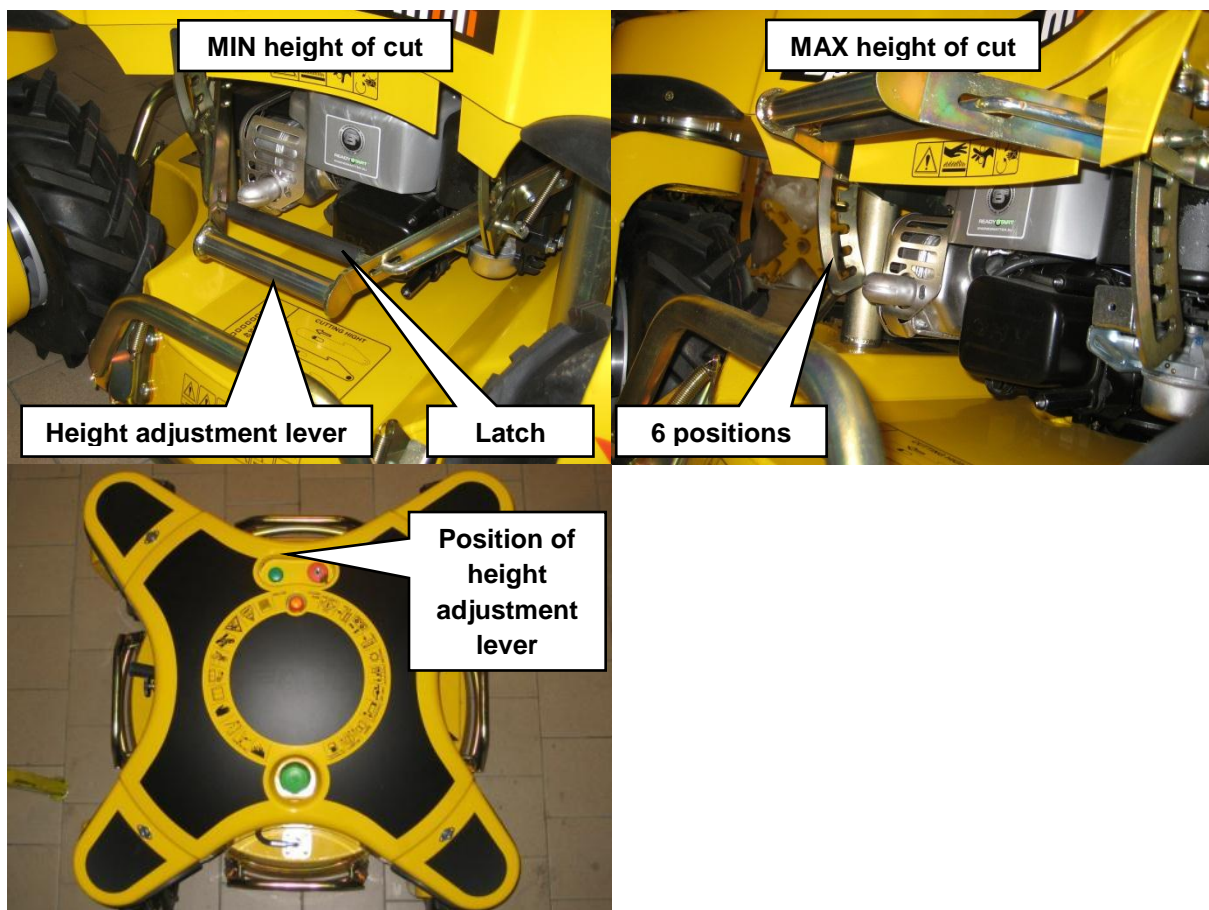
In areas with tall or wet growth use higher position of the mower deck. Lowest height setup is used for the mowing of flat and well maintained areas.



If mowing an unknown area for the first time, it is recommended to select a higher position of mower deck, mow the area and then repeatedly check the area for debris. Next mowing should be performed after the mowed grass has dried.



The height of cut on a slope may significantly vary from that on a flat surface.



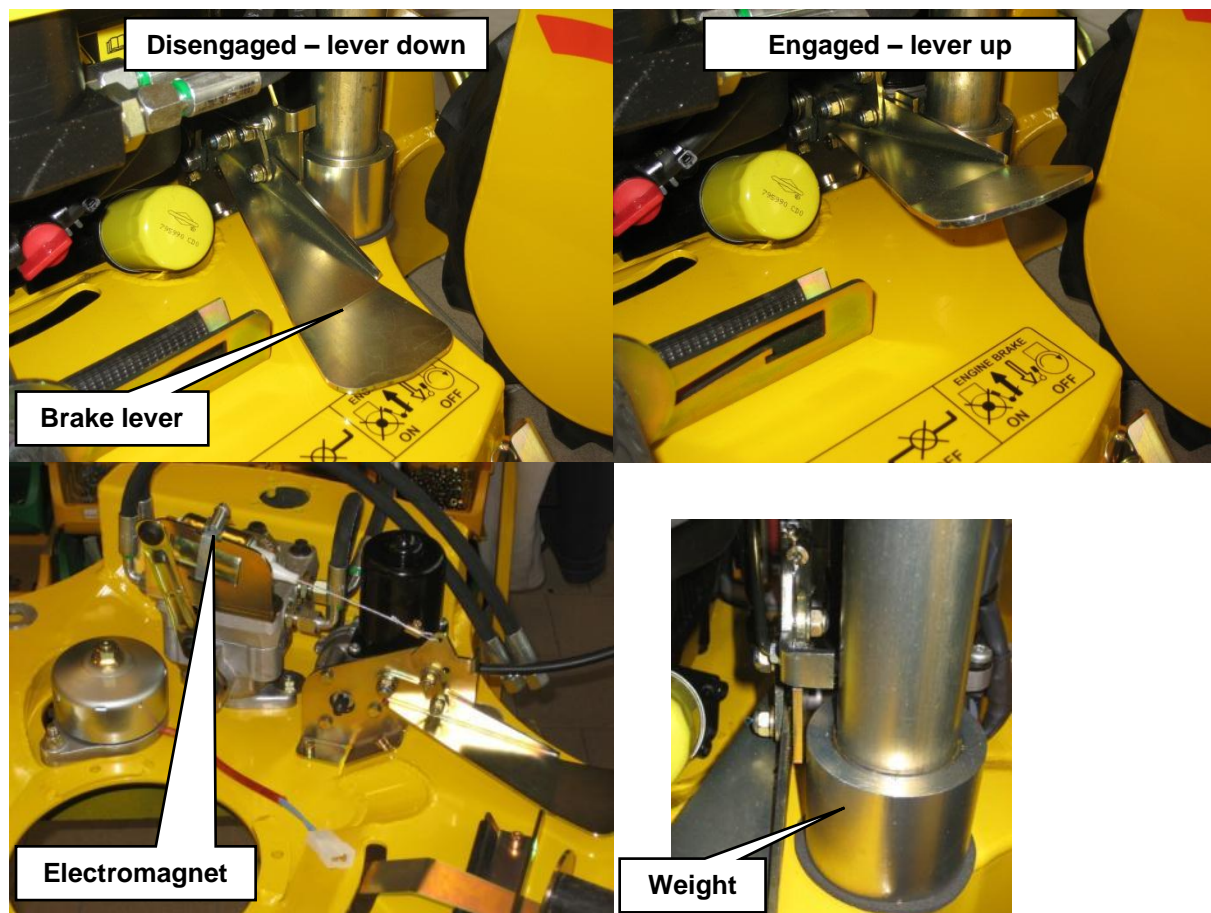
9.7. ENGINE BRAKE

The mower is equipped with an engine brake, which ensures quick stop of the engine (mowing blade) when the EMERGENCY STOP button on the mower or on the RC is activated. The engine brake will also be automatically activated should the mower roll over.

The engine brake is controlled by an electromagnet, which unlocks engine brake lever. The spring of the engine brake then stops the engine. The brake adjustment lever is also controlled by a weight placed on a sliding bar. This weight activates the brake when the mower rolls over.



The engine brake is a basic safety element of the mower. To do make any modifications to the lever system or the engine brake itself. In case of failure contact an authorized service centre. For proper functioning it is necessary to keep the lever system clean and lubricate it regularly with a chain spray.



9.8. MOWER DRIVE AND STEER

The mower movement is controlled by forward / reverse drive joystick (4) and left / right steer joystick (5). By combining these two joysticks you can control the movement of the machine. By moving the forward / reverse drive joystick the driving speed of the machine proportionally increases. The steering of the machine is not proportional and the joystick only activates left or right steering of the wheels.

NOTE:



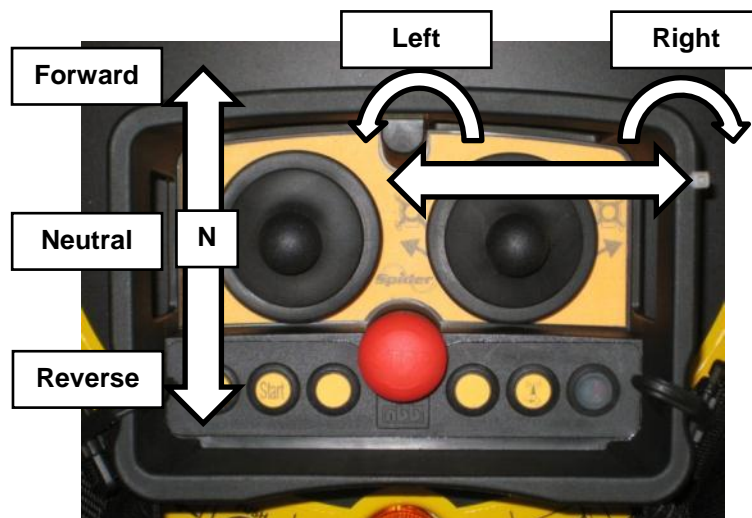
Accelerate slowly so as to be able to react to the direction in which the mower starts to move. The arrows on the wheel housings show the direction the machine will move when forwards motion is selected.

When driving, slowly move the drive joystick in the desired forward or reverse direction.

When changing the forward drive to reverse drive, always leave the joystick for a short moment in the neutral position.

In cold weather let the engine run for about 2 minutes to allow the oil to get warm before driving.

Always choose a suitable driving speed, which enables an acceptable mowing quality. When selecting speed, always start with slow and proceed to fast, not the other way around. If the growth is thin, you may mow at higher speed.



9.9. DRIVING ON SLOPES

Driving on slopes is very demanding for the operator, as they constantly have to evaluate information about the movement of machine and the character of the terrain. Especially important is the wheel adhesion to the grass or other surface and the mower tilt angle. Pay attention to climatic conditions. The climbing ability of the mower will be radically different on dry, wet or moist grass slopes.



The mower may work on slopes up to 30 degrees only when the surface (grass) is dry- If the surface (grass) is wet or moist the maximum slope, on which work is permitted, is 20 degrees.

Examine closely the working area. Evaluate the situation and test the possibilities and characteristics of the specific terrain. Do not take chances. If the mower loses traction, you have lost control, stop mowing and re-evaluate the conditions.



The driving wheels of the mower have to be evenly inflated to the prescribed value of 200 kPa (2bar / 28 PSI). The maximum tyre pressure according to the tyre manufacturer is 220 kPa (2,2 bar / 30 PSI). The tyres must not be underinflated or overinflated.

Start your work at the bottom of the slope and proceed to the top. This way you will be usually moving from less to more steep slopes, which will give you a better chance to evaluate the climbing ability and make the right decisions concerning further work. If you begin to mow steeper slopes first, it may happen that – due to adverse conditions - the mower will slip on the slope. Due to dynamic effects the mower may even roll over. The method of cutting from the top of the hill to the bottom should only be used exceptionally when the operator is in detail acquainted with the terrain.



If the mower is slipping, do not try to stop it and do not approach it, especially the area below the mower. Do not touch or approach the mower if the wheels are lifted, the mower tilted, in an unstable position or starting to roll over.



Before operating on slopes, make sure that no other person is below the mower, above the mower, below or inside the working area. Do not endanger third persons by the movement of the mower.

Choose your operating position away from the area to which the mower may slide or to which the mowed grass may be thrown. The direction of the discharged grass may change while operating according to the driving direction of the mower.



When working on slopes and when driving in an unknown terrain, make sure that the fold-out bumpers are locked in a horizontal position. The fold-out bumpers increase the mower resistance against rolling over. For correct functioning the bumpers must be undamaged and properly locked.

When working on slopes avoid the following:

- Sudden, sharp steering or braking
- Rapid acceleration uphill or braking downhill, sharp change of driving direction
- High driving speed
- Driving on uneven surface
- Changing adhesion (moving from areas exposed to sun to shade etc.)
- Stopping on the slope and shutting off the engine.

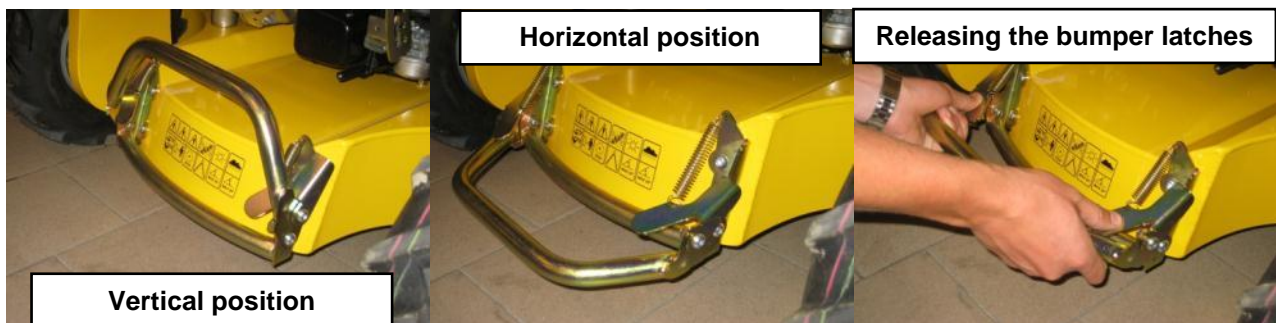
9.10. FOLD-OUT BUMPERS

The mower is fitted with fold-out bumpers, which improve work safety when working on slopes and in unknown terrain and increase the mower resistance against rolling over.

- For transport keep the bumpers in a vertical position.
- For use, fold the bumpers down to the horizontal position until all latches of the bumper snap inside the bumper locks.
- To fold the bumpers back to the vertical position push with both thumbs onto the latches until they are released from the locks. Pull the bumpers upwards to the vertical position.



Fold-out bumpers are only functional when properly locked in a horizontal position.
The use of fold-out bumpers does not increase the maximum permitted slope / mower tilt.



9.11. STOPPING THE MOWER ON A SLOPE

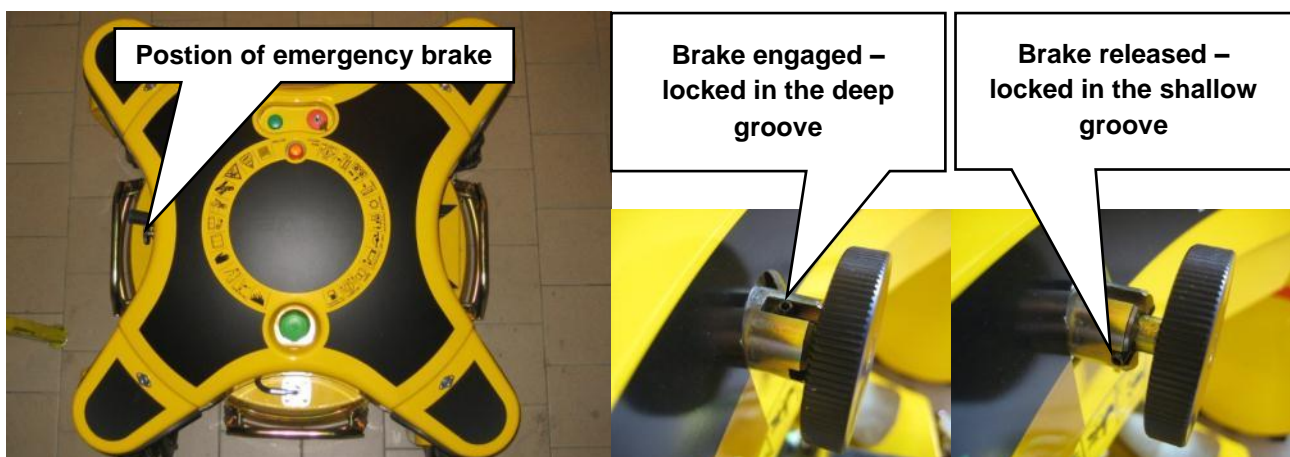
In case you are forced to stop the mower on a slope and interrupt your work for whatever reason, be sure to position the wheels across the slope and secure the mower by the emergency brake. This will prevent the mower from moving down the slope.



When releasing the emergency brake on a slope, make sure that you start the engine prior to releasing the emergency brake..

Brake locked in the shallow groove (pulled up) – brake released

Brake locked in the deep groove (pushed in) – brake engaged



10. MAINTENANCE AND LUBRICATION

10.1. MOWER MAINTENANCE CHART

| | | Period according to the counter of operating hours (OH) | | | |
|---|------------------------|---|----------------------------|-----------------------------|------------|
| X = Operator S = Authorised service centre * = in dusty environment check more frequently | Daily or every 8 OH | After first 5 OH | Annually or every 50 OH | Annually or every 200 OH | Annually |
| Visually check for oil leakage from engine and hydraulic systems | X | | | | |
| Check tyre pressure | X | | | | |
| Visually check the tension of drive V-belt | | | X | | |
| Visually check the tension of drive and steering chains | X | | | | |
| Check mower battery voltage | | | X | | |
| Check electronic and safety devices (emergency stop, steering, transmitter signal etc.) | X | | | | |
| Check bolts and nuts tightening (visually check daily) | X | | X | | |
| Check blade sharpness and deformation | X | | | | |
| Check blade bolts tightening | X | | | | |
| Visually check hydraulic hoses, fuel hoses, cables – replace if necessary | | | | | X |
| Check and adjust wheel geometry | | | | X | |
| Adjust the neutral position of the machine drive (hydraulic pump) | | | | S | S |
| Change hydraulic oil and filter | | | | S | S |
| Check and adjust wheel housing, add oil | | | | S | S |
| Check blade deceleration time | | | | S | S |
| Check drive belt, replace if necessary | | | | X | |
| Check and clean the mowing blade clutch | | | X | | |
| Check safety labels | X | | | | |
| Check bearings of the mowing device | | | | S | S |
| Change engine oil | | X | X | | |
| Change engine oil filter | | | X | | |
| Check engine oil level | X | | X | | |
| Clean engine cooling system, exhaust cover, alternator, starter, hydraulic system and controllers | X | | | | |
| Clean air filter and rough air filter | | | | X * | |
| Change air filter and rough air filter | | | | X * | |
| Change spark plugs | | | | | X |
| Change fuel and breather filters, clean the fuel tank | | | | | X * |
| Check valve clearance, adjust if necessary | | | | | S |

10.2. ENGINE MAINTENANCE



The following activities are considered to be workshop maintenance and should be carried out by trained personnel.

Before beginning any maintenance activity on the mower, turn off the engine, push the emergency button and remove the key from the button. Also turn off the remote radio controller by the switch on the control panel.

To eliminate the possibility of an unexpected start of the mower, disconnect the (-) terminal connector on the battery.

The engine should only be repaired or serviced by an authorised dealer/servicing facility that possesses all necessary tools, equipment, spare parts and professional skills.

When maintaining, repairing or cleaning, always follow the engine manufacturer's user's manual, which is included in the technical manual pack.

10.3. CLEANING THE FUEL TANK

While using the mower impurities may settle in the fuel tank. These impurities may cause a blockage of the fuel system while using the mower.

The fuel tank may only be emptied by siphoning the fuel while adhering to all safety precautions for manipulation with fuel.

The breather system is placed in the upper part of the fuel tank and is fitted with a roll-over valve and a breather filter. Its blockage may be recognized by an incorrect functioning of the engine and vacuum pressure in the fuel tank.



Do not smoke or approach open fire while manipulating with fuel.

10.4. HYDRAULIC DRIVE MAINTENANCE

The maintenance of hydraulic drive requires properly trained service personnel.

Regular maintenance should focus on the check of tightness of hydraulic connections and bolts.

The replacement of hydraulic lines and adding of oil should only be performed by an authorized service center.



The maintenance of the hydraulic parts must be carried out in a very clean working area. Any contamination brought into the hydraulic circuit may result in damage



The hydraulic drive must never work without or with an insufficient amount of oil, not even for a short time. If you detect hydraulic oil leakage, have the mower serviced and oil added by an authorized service centre.



Do not check the tightness of the hydraulic circuit with a bare hand, but always use a suitable tool. A jet of hydraulic oil may seriously damage your health.

10.5. VERTICAL SERVICE POSITION

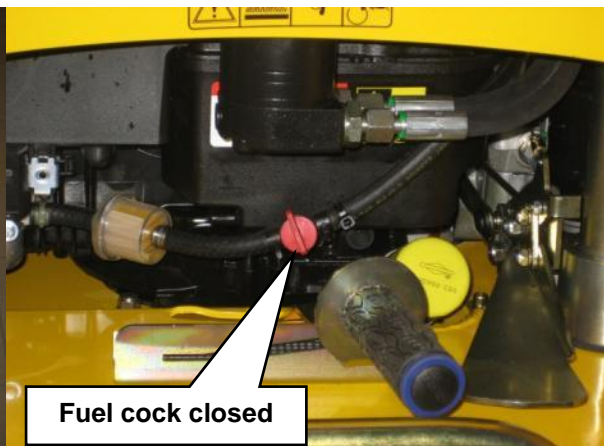
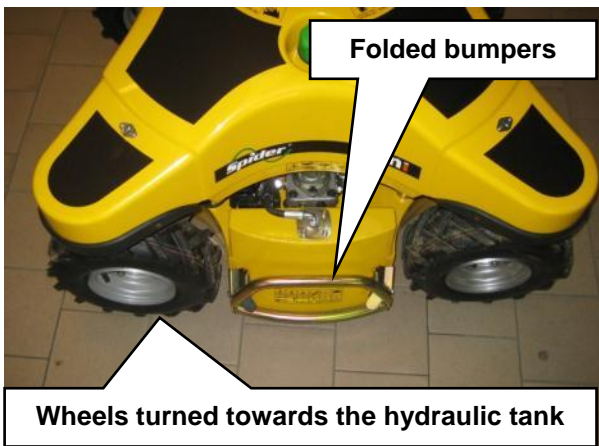
For cleaning and maintenance of the mower deck it is possible to place the mower to a vertical service position. The vertical service position may only be used on a firm and flat surface and only for the time needed to perform the maintenance.



It is prohibited to leave the mower in the vertical service position unattended or to store it this way. It is prohibited to manipulate with the height adjustment lever while the mower is in the vertical service position.

Instructions:

1. Place the mower on a flat and firm surface.
2. Turn the wheels so that the tyres are next to the hydraulic tank.
3. Turn the mower off by the EMERGENCY STOP button.
4. Check the tightening of the fuel cap and the engine oil dipstick.
5. Close the fuel cock.
6. Fold the bumpers to the upper (vertical) position.
7. Select minimum height of cut.
8. Use the handles on the exhaust side of the mower to lift it as far up until the handles on the hydraulic tank side lean against the ground.



10.6. ADJUSTING THE NEUTRAL POSITION OF THE DRIVE SERVO

In case the mower tends to creep in the neutral position, have the mower serviced by an authorized service centre.

10.7. DRIVE V-BELT

If you do not have necessary tools and expertise, have this work performed by an authorized service centre. The drive V-belt drives the hydraulic pump and the alternator. The alternator is also used as a tightening component for the drive belt. Every 50 operating hours the tension and wear of the drive V-belt should be checked.

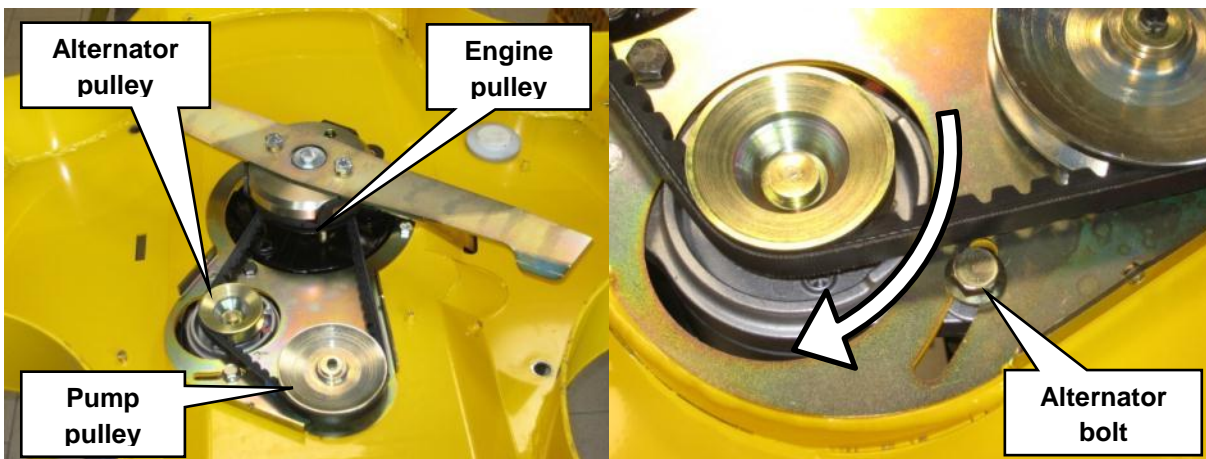


If not tight enough the belt will slip and wear very quickly.

Excessive tension on the belt puts stress on the engine crankshaft and may result in engine damage.

Instructions:

1. Place the mower to vertical service position.
2. Dismount the belt cover.
3. Release the alternator bolt.
4. Move the alternator as the arrow indicates in order to tension the belt.
5. Tighten the alternator bolt
6. Mount back the belt cover.

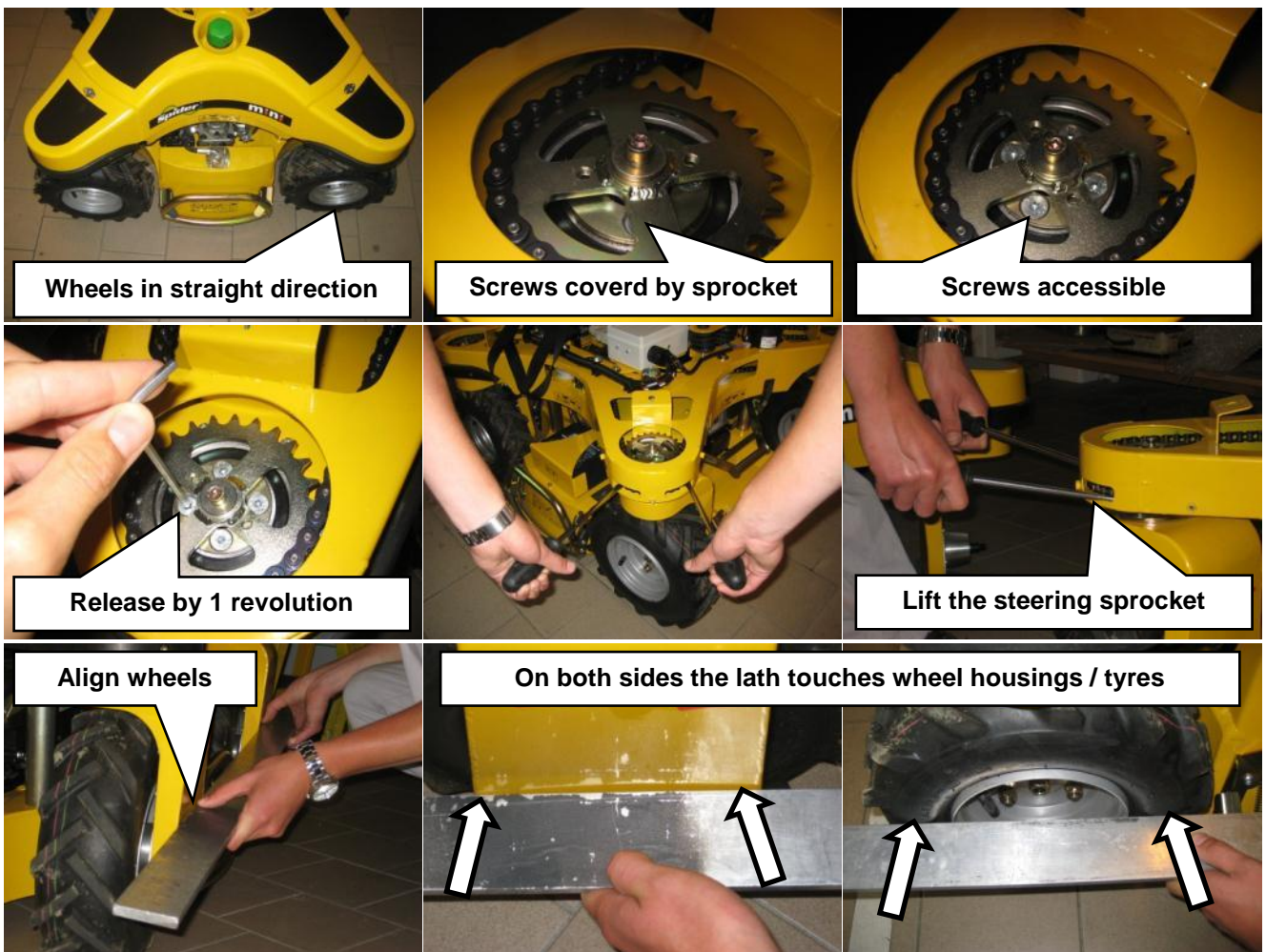


10.8. GEOMETRY ADJUSTMENT

If you do not have necessary tools and expertise, have this work performed by an authorized service centre. Before adjusting the geometry it is necessary to have the steering chain properly tensioned.

Geometry adjustment instructions

- Support the mower at the places marked by the chain symbol so that the wheels are freely in the air.
- Turn the wheels in a straight direction.
- Release the hydraulic drive by-pass bolt by 1 revolution.
- Manually turn the wheels so that the drive sprocket does not cover the taper lock screws.
- Release 4 M6 screws of the taper lock by 1 revolution.
- Dismount the handles.
- Use a screwdriver to lift and release the chain sprocket from the taper lock. The wheel suspension will now freely turn around its axis. In the same way release all suspensions, which you desire to align.
- By placing a straight lath to the wheel housings on the left side and tyre discs on the right side adjust all wheels to be parallel.
- Slightly tighten the screws of the taper lock and check the geometry with the lath.
- Tighten the taper lock screws and secure the chain sprocket. Tightening torque is 15 Nm.
- Close the hydraulic by-pass bolt.



10.9. WHEEL DRIVE GEAR

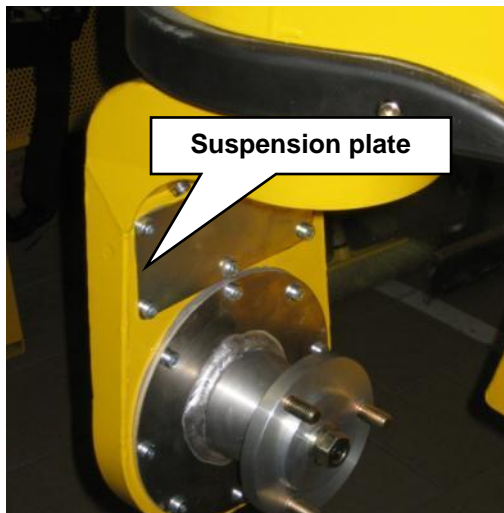
The terminal gear in the wheel suspension is fitted with an automatic tensioner and thus does not need to be adjusted. In case of oil leakage add 50 ml of transmission oil to the wheel suspension.

Instructions for adding oil

- Lift the mower and support it so that wheels are freely above ground.
- Loosen three nuts and dismount drive wheels
- Dismount the (thin) cover plate of the wheel suspension. Clean both the plate and the surface of the wheel suspension.
- Add about 50 ml of transmission oil and degrease both contact surfaces.
- Seal the contact surfaces with silicon glue and tighten all bolts.
- Mount back all drive wheels and tighten wheel nuts.



Do not modify inner components of the wheel suspension. Have them serviced by an authorized service centre if necessary.



10.10. MAINTAINING ELECTRIC CIRCUITS, DEVICES AND TRANSMITTER

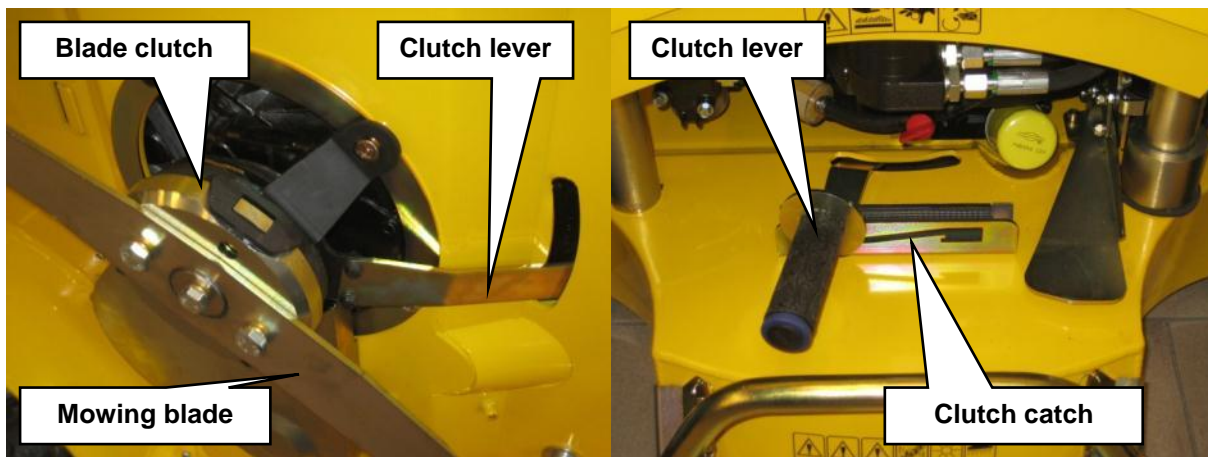
Keep all parts of electric circuits clean, especially from oil products, dust sediments and dry grass. Replace conductors with damaged insulation. For replacement use only original conductors supplied by the manufacturer.



Repairs of electric circuits should only be performed by authorized service centres.

10.11. CLUTCH OF THE MOWING BLADE

The blade clutch is placed on the crankshaft between the main deck and the blade. When engaged the clutch transmits torque to the blade. When disengaged a brake secures the blade against free movement. Do not modify the clutch. In case of failure have this part of the mower repaired by an authorized service centre.



10.12. DRIVE AND STEERING CHAINS

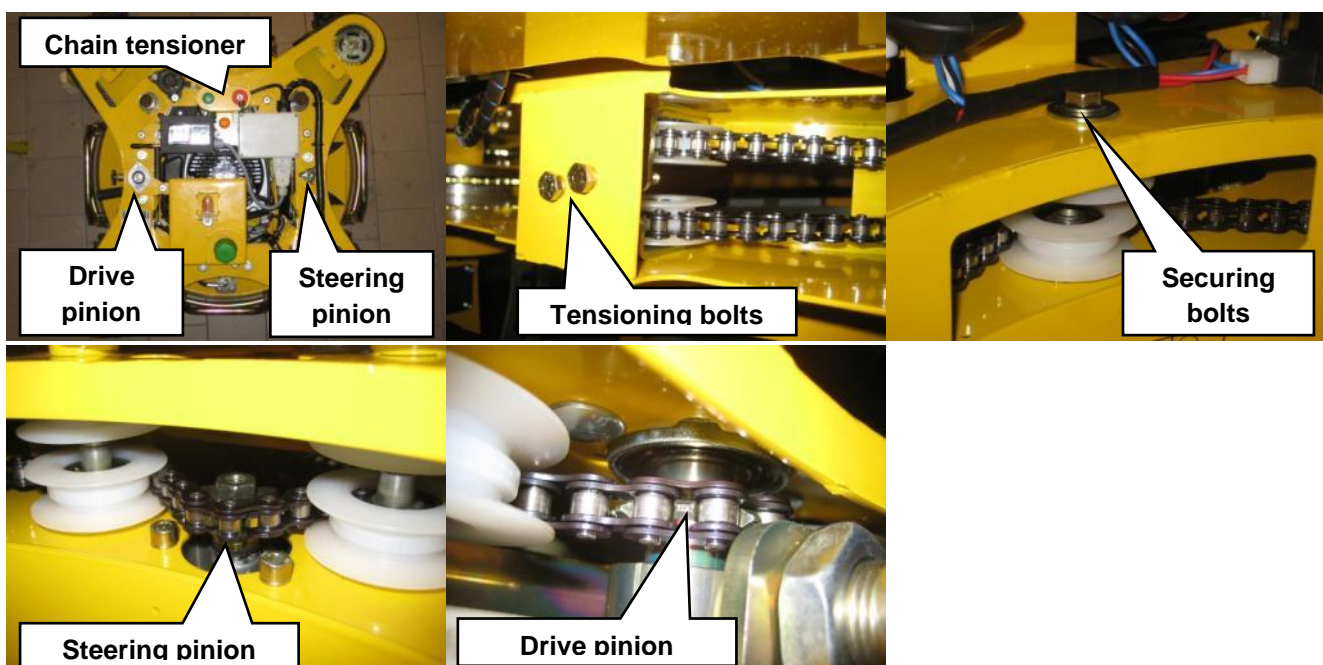
Check the tension and wear of the drive and steering chains. The chains can be tensioned by two tensioner placed on the upper and bottom part of the top frame under the EMERGENCY STOP button.

Tensioning instructions:

- Loosen M8 bolts securing the chain tensioner.
- Use tensioning bolt M6 on the inner part of the mower frame to move the tensioner until the chain is properly tensioned.
- Tighten securing M8 bolts of the tensioner.
- In case the steering chain is too loose it is necessary to check the mower geometry and adjust if necessary.



Check the wear of the steering servo and hydraulic motor pinions. In case of excessive wear change for new ones.



10.13. FUSES, RELAYS

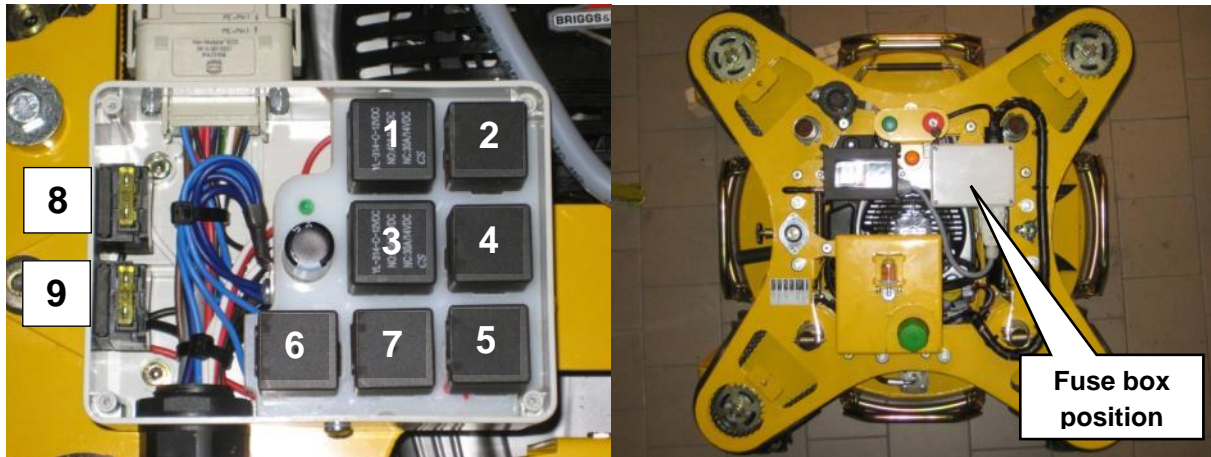
The fuse box is placed in the upper part of the mower under a protective cover. The fuse box holds main fuses of the mower and relays for the switching of various function of the mower.



Never modify any components inside the fuse box as this may lead to short circuits and damage electric components of the mower. Have the relays replaced by an authorized service centre.



When replacing fuses follow the electric current value for which the fuses are designed. Do not replace damaged fuses with fuses with a higher or lower electric current value. These could cause damage or even a fire in the mower!



1. Main switching relay for the machine power supply
2. Ignition grounding relay
3. Starter switching relay
4. Steering relay
5. Steering relay
6. Power relay of engine brake
7. Control relay of engine brake
8. 20A charging fuse
9. 20A main machine fuse

10.14. MOWING BLADE

Regularly check the condition of the mowing blade.

The blade:

- must not show signs of damage, such as twisted, bent or deformed parts of the blade;
- must be properly attached to the flange by bolts;
- must be sharp;
- fastening bolts must not be damaged



For proper and reliable functioning the blades are statically balanced by the manufacturer. This balance must be preserved during the entire use of the blade. The blade must be statically balanced after each sharpening. To tighten the blade, use a torque wrench and a specified tightening torque of 60 Nm



If the blade is damaged it is prohibited to:

- straighten it
- heat it
- weld it
- reinforce it or otherwise change its construction

When replacing worn-out parts follow these rules:

- The permitted wear of the blade is 12 mm (0,5 inch). Blade must be replaced if the wear is higher than permitted.
- Balancing must be carried out after sharpening
- The blade cannot be repaired / renewed.
- When changing the blade, use new fastening bolts if the current ones show signs of damage. Only high-tensile steel bolts may be used for this purpose. No other steel bolts are acceptable.
- If the mowing mechanism vibrates when engaged, do not continue operating the mower, turn it off and contact your local dealer.
- To tighten bolts use torque listed in the chart at the end of this chapter (see 11.19).

Changing the mowing blade

- Stop the engine, turn off the RC and press the EMERGENCY STOP button on the mower
- Disconnect the battery.
- Place the mower on a flat and firm surface.
- Lift the mower to the service position and secure it against falling.
- Use gloves to change the blades.
- Release fastening bolts of the blade. Remove the bolts and washers. Attention, the blade may fall down to the ground when the bolts are removed.
- Work in reversed order when mounting new blade.
- Always check the bolts when mounting a blade.
- After mounting the blade check if it holds firmly. Pay special attention to the first engagement of the blade after replacing it. Check for unknown sounds and vibration.



Always lift the mower on the side of the exhaust and place it with hydraulic tank down so as to prevent oil from leaking inside the air filtration. Do not spill the oil.

10.15. CHANGING THE WHEEL

- Change the wheels on a level, firm surface
- Turn the wheel so that the tightening nuts are accessible from the outside
- Stop the engine, remove the key from the ignition
- Secure the machine against movement.
- Lift the mower and support it under the mower deck
- Ensure the machine safe & supported before working on it.
- Loosen the wheel nuts, remove the wheel
- After repairing it, attach the wheel back in the reversed order.
- Use suitable tools to unscrew the nuts



10.16. TYRE PRESSURE

Make sure that the tyres are always inflated to specified tyre pressure. Other values may unfavourably influence the driving characteristics of the mower, especially on slopes. You may even lose control over the mower..

Specified tyre pressure: 200 kPa / 2 bar / 28 PSI

Maximum tyre pressure according to the tyre manufacturer: 220 kPa / 2,2 bar / 30 PSI

10.17. HEIGHT OF CUT ADJUSTMENT MECHANISM

Keep the sliding bars and height adjustment lever clean, undamaged and without excessive clearance. Adhere to the lubrication schedule for pivots and sliding parts of the mower height adjustment system.

10.18. LUBRICATION

Use adequate amount of lubricant on parts, which are to be lubricated. Excessive lubricant tends to drop down and pollute both the machine and the environment. Insufficient amount requires frequent lubrications.

For the lubrication of sliding parts, pivots and chains use chain spray (e.g. Cain grease Berner). Make sure the lubricant is applied exactly on the lubrication point. This will prevent the accumulation of dirt on the lubricated surfaces.

Lubrication points:

1. Height adjustment lever (pivots, friction surfaces of levers, sliding bar inside a bushing)
2. Chains (steering chain, drive chain)
3. Emergency brake lock
4. Engine brake (pivots and friction surfaces of levers)
5. Sliding bar under the brake weight
6. Pivots of fold-out bumpers



10.19. CLEANING THE MACHINE

Machine cleaning by high pressure water is not recommended. Pressurized water may penetrate inside electrical parts, carburettor, air filter and cause malfunction. Wipe other parts with tissue or brush. Do not use gasoline or other oil products for cleaning.

The mower deck should be thoroughly cleaned after every use, especially the inner walls of the bottom part of the mower deck. For cleaning use a scraper. Secure the mower against undesired movement when cleaning. During cleaning also check the condition of the blade.

Proper maintenance and treatment of the mower deck increases the quality of work and service life of your mower. After cleaning and drying conserve the scratched parts with a protective paint, especially if you do not intend to use the mower for a longer time.



If the mower is lifted during cleaning, secure it against falling and movement, remove the spark plug terminal and press the EMERGENCY STOP button on the mower.



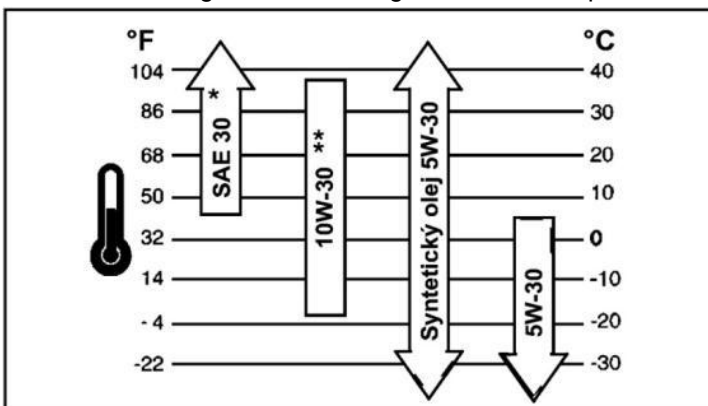
10.20. TORQUE CHART

| Connection bolt | M6 (8.8) | M6 (10.9) | M 8 | M 10 | M 12 |
|------------------------|----------|-----------|-----|------|------|
| Tightening torque /Nm/ | 10 | 15 | 25 | 50 | 85 |

10.21. OIL VISCOSITY

Oil requirement may differ according to the use in different seasons or climatic zones. The following chart shows the SAE values:

Chart of SAE oil grades according to external temperatures.



Recommended oils:


SAE 30, SAE 10W-30 API classification SF or higher

10.22. TECHNICAL PLATE

The technical plate provides information on mower fillings and basic information for machine maintenance. The technical plate is placed on the machine frame.

| | |
|-------------------------------------|----------------------|
| Type | SPIDER MINI |
| Engine: B&S 850 SERIES I/C ECO PLUS | |
| Oil | SAE 30/10W30 API SF |
| Quantity | 0,6 l |
| Spark plugs | Champion QC12YC |
| Fuel | Unleaded petrol |
| Hydrostatic system: | |
| Oil | HV 68 |
| Quantity | 2,5 l |
| Electronic system: | |
| Accumulator | GV 12V/18Ah |
| Fuses | 20A / 20A |
| Tires: | |
| Type | 13 x 5,00 - 6 |
| Pressure | max. 220kPa / 30 PSI |
| Lubrication: | |
| Chains, others | Berner PTFE |

- engine
- engine oil
- oil quantity
- spark plug
- fuel
- hydraulic system
- hydraulic oil
- oil quantity
- electronic system
- battery
- fuses
- tyres
- tyre type
- maximum pressure
- lubrication
- chain gears
- sliding surfaces



11. TROUBLESHOOTING

| Problem | Possible cause | Correction |
|--|--|---|
| No green light illuminates after RC is turned on | No or empty batteries in the RC | Insert fully charged batteries into the RC. |
| | RC failure | Turn off the RC and turn it on again. If restart does not help, contact an authorized service. |
| Red light flashes after RC is turned on | Empty RC batteries | Insert fully charged batteries into the RC. |
| After pressing the confirmation / horn button a connection between the RC and the mower is not established. The mower is otherwise fully functional. | The RC does not belong to this mower. | Check the RC number and Control Unit number. They must be identical. Use the correct RC. |
| | Signal is interfered with by another device working on the same frequency. | Turn off the interfering device, get closer to the mower. Press and hold the antenna button on the RC and at the same time press the horn button to change the RC channel. Then press the horn button again. |

| The mower does not activate after turning on the main switch on the mower | | |
|---|--|---|
| Beacon does not flash (failure of main electric power supply) | Battery is not connected properly or is empty | Properly connect a fully charged battery. |
| | Disconnected cables of the mower electric harness | Check cables and connectors. |
| | Main fuse failure | Change the fuse for a new one with the same value |
| Beacon flashes (electric power is supplied) | Mower battery is not fully charged | Charge or replace mower battery |
| | Connection between the RC and the Control Unit was not confirmed | Repeatedly press the RC confirmation button. Check the RC functions. See the beginning of this chapter. |
| | Control Unit is not properly connected | Check the LED light on the Control Unit. It must flash. |
| | Control unit is properly connected, but the light on the Control Unit is not flashing. | Control unit failure. Contact an authorized service centre. |

| Mower cannot be started. Communication between RC and Control Unit is OK. Mower power supply is OK. Beacon is flashing. | | |
|---|--|--|
| Neutral light is not illuminated | Communication between RC and Control Unit was not confirmed. | Press confirmation / horn button on the RC |
| | Drive servomotor is not in the neutral position. | Move drive joystick slightly forward and backward until neutral light illuminates. |
| | Check if the drive servomotor lever is not mechanically blocked (by debris, sticks etc.) | Release the drive servo lever so that it can freely move. |
| | Light is damaged (does not affect starting of the mower) | Change the LED neutral light |
| | Servo lever does not respond to | Restart the mower and try again. |

| | | |
|--|---|---|
| | joystick movement | Otherwise contact authorized service |
| Neutral light is illuminated | No relay clicking sound is audible from the fuse box when start button on the RC is pressed | Change the starter relay in the fuse box. |
| Neutral light is illuminated. Starter relay works correctly. | Engine brake is activated | Release the engine brake by pressing the lever, which activates starter and ignition. |
| Neutral light is illuminated. Starter relay works correctly. Engine brake is released | Disconnected cable between fuse box and started | Check cables and connectors |
| | Defective switch of the engine brake. | Check voltage before and behind the engine brake switch. You should read 12 V when start button is pressed. |
| | Defective engine starter | Replace the engine starter |
| Mower cannot be started. Starter freely turns the engine. | Closed fuel cock or lack of fuel in the fuel tank | Check the fuel cock and refuel |
| | Clogged fuel filter | Change the fuel filter. |
| | Low quality fuel | Change fuel |
| | Disconnected or defective spark plug | Check the spark plug and replace if necessary |
| | Broken ignition cable | Check the cable |
| | Defective switch of the engine brake | Change the switch. |
| | Dirty air filter | Clean or change the air filter and rough air filter |
| | Clogged and dirty carburettor | Clean the carburettor |
| | Blocked or non-functional automatic engine choke. | Check the choke line, replace if necessary. |
| | Clogged engine exhaust. | Clean |
| Mower cannot be started. Starter turns the engine with difficulty. | Blocked mowing blade | Disengage blade clutch and select maximum height of cut |
| | Empty battery | Check battery voltage and recharge or replace battery if necessary. |
| | Lack of engine oil | Check and add engine oil |
| | Worn starter pinion | Replace |
| | Defective started | Replace |
| | Blocked drive belt | Clean the belt space and make sure it turns freely |
| | Blocked hydraulic pump. (possible repair should only be performed by authorized service) | After releasing drive belt check if the pump pulley freely turns. |
| | Blocked alternator | After releasing drive belt check if the alternator freely turns. Clean the space around the alternator. |
| Drive servo lever does not react. Connection between RC and CU is OK. Mower can be started. | Loose lever between the servomotor and the hydraulic pump | Check the tightness of nuts and bolts of the lever mechanism |
| Mower drive does not work or is insufficient | Open pump By-pass | Close the pump By-pass |
| | Worn, broken or loose drive belt | Check the drive belt |
| | Lack of oil in hydraulic system | Add oil in authorized service |
| | Worn mechanical elements of the hydraulic circuit | Change in authorized service |

| | | |
|--|--|--|
| | Overheated hydraulic oil | Let the mower cool down and clean the space around the hydraulic pump for better cooling |
| Mowing blade clutch slips | Dirty functional surfaces of clutch | Clean |
| | Clutch worn out excessively | Replace worn components |
| | Clutch damaged by hitting a firm obstacle | Check the blade hub and replace if necessary. |
| Clutch does not stop the blade | Dirty functional surfaces of clutch. | Clean |
| | Block clutch disengagement mechanism | Check and clean. |
| | Clutch worn out excessively | Replace worn components |
| Clutch makes noise | Dirty functional surfaces of clutch. | Clean |
| | Clutch loose on the crankshaft or loose blade. | Tighten and glue fastening bolts of clutch and blade |
| | Worn clutch bearings | Check free turning of functional components of the clutch. Replace if necessary. |
| Mower vibrates when clutch engaged. | Unbalanced or bent blade | Balance and sharpen blade, replace if necessary |
| | Damaged blade hub | Replace |
| | Bent crankshaft | Contact authorized service |
| | Insufficiently tightened blade | Glue and tighten blade bolts |
| Mower pivots around vertical axis while driving | Unevenly inflated tyres | Check tyre pressure |
| | Wrong wheel geometry | Check and adjust geometry |
| Bad mowing quality | Overgrown, wet or tall grass | Mow grass max. 3x higher than the selected height of cut. Let the grass dry before mowing. |
| | Blunt or worn mowing blade | Sharpen or replace the blade |
| | Low engine RPM | Check engine RPM in an authorized service centre |
| | High driving speed | Slow down |
| | Clogged mower deck | Clean |
| Engine brake does not work when EMERGENCY STOP button is pressed | Dirty surfaces of the lever mechanism | Clean and lubricate |
| | Mechanically damaged brake mechanism. | Check in an authorized service centre. |
| | Engine brake excessively worn | Replace in an authorized service centre. |

12. AFTER-SEASON MAINTENANCE

When the season is over or if the machine is not going to be used for longer than 1 month, it is advisable to prepare it for storage. If fuel stays in a tank longer than 1 month without moving, it may create sticky sediment that can unfavourably affect the carburettor and the whole fuel system and cause engine malfunction.

- Thoroughly clean the whole machine, especially the mowing mechanism.
- Replace damaged or worn-out parts
- Check all bolted connections. Tighten all loose nuts and screws.
- Lubricate all mobile parts – the whole machine (according to the lubrication plan)
- Empty the fuel tank and let the engine run until it runs out of fuel.
- When emptying the fuel tank, work in an open area outside.
- Prepare the engine for storage (according to the user's manual of the engine)
- Disconnect the ignition cable.
- Turn the engine by starting it shortly with the ignition key without spark plugs on.
- Screw the spark plug back hand tight. Do not connect the cable.
- Dismount the Accumulator and store it on the dry and warm place.
- Keep the mower in a safe and dry place. Use the permeable cover to protect the mower against the corrosion.
- Do not allow unauthorized people approach the mower.

13. WARRANTY CONDITIONS

This document sets out the extent, conditions and manner of exercising rights stemming from the Manufacturer's liability for defects of the delivered Product

1. Dvořák – svahové sekačky Ltd., registered office Dvorce 62, Havlíčkův Brod 58001, Czech Republic, ID No. 2601379 (further referred to as "Manufacturer") provides a Warranty for new Products according to the set regulations for a period of 24 months from the day the Product is delivered to the Customer, or from such a Product being set into operation, or up to 800 operating hours, according to whichever happens first. The Warranty period for new spare parts delivered under Warranty expires together with the Warranty period of the whole Product/machine.
2. Claims stemming from the Warranty must be exercised with the Distributor / Dealer and also resolved by them. A properly completed Warranty sheet must be presented and all of the inspections prescribed by the Manufacturer must have been implemented. Incorrect information, additional extracts or overwriting on the Warranty card lead to loss of the Warranty.
3. The Warranty applies to defects on the Product caused by defective raw materials, construction faults or made workmanship. Defective parts on the Product will be replaced free of charge with a new part or repaired. No entitlement to immediate delivery is created and the Manufacturer takes on no liability for damage claimed for as a result of delayed delivery.
4. The Warranty does not relate to regular wear and tear (parts susceptible to regular wear and tear especially include the following: blades, blade hubs with bearings, bearings of wheel shafts, spark plugs, air filters, belts, chains, tires, sealing, hydraulic hoses, winch rope etc...).
5. The Warranty cannot be claimed against if the cause of the defect is:
 - a) The effects of external mechanical or chemical influences on the Product
 - b) Unreasonable handling of the Product, overloading it, neglect or incorrect operation
 - c) Repair of maintenance of the Product performed by a third party, which was not authorised to carry out such work by the Distributor / Dealer or Manufacturer
 - d) Installation of such parts into the Product, the use of which is not approved by the Manufacturer
 - e) Implementation of changes to the Product, which were not approved by the Manufacturer
 - f) The fact that the Manufacturer's regulations were not adhered to for handling the Product, its maintenance and treatment (e.g. the instruction and maintenance manual), especially if the prescribed Warranty inspections were not carried out
 - g) The fact that the user neglected declaration and removal of defects, which were apparent when they took receipt of the Product or which they did not immediately provide notification of an have removed, when they arose later
6. In case of Products sold with a discount the Warranty does not extend to defect for which the discount was granted.
7. All claims stemming from the Warranty are forfeit on expiry of the Warranty period. In the case of defects, for which notification was made during the course of the Warranty period and which were not removed during this period, this Warranty remains valid until the defect is removed. In this case, the Warranty is terminated at the latest within 1 month of the last repair or after declaration by the Distributor / Dealer that the defect was removed or that this does not concern a defect.
8. The Manufacturer is not liable for any economic loss or for any subsequent damage caused to persons or their property, which was created as a result of failure of the Product.
9. The Warranty will only be valid subject to the condition that the correctly completed part 2 of the "Combined delivery note" is delivered to the Manufacturer within 14 days of the date the Product is delivered to the Customer.
10. The Warranty applies to the Product in the condition in which it leaves the production plant. The Manufacturer is not liable for damage during transportation.
11. In the event of a change in owner, it is possible to transfer the remaining part of the Warranty period to the new owner if the Manufacturer is requested to do so. The new owner confirms that they have taken receipt of the instruction manual at the same time as the Product as well as the Warranty conditions and that they agree with these.

12. The Warranty period is extended by the period of the duration of the Warranty claim assessment. (The Warranty claim assessment period begins on the day following the day the Product is accepted for assessment and terminates on the day the Warranty is acknowledged or rejected, not on the day the Customer collects the Product back). In case the Warranty claim is rejected, the Warranty period will not be extended!
13. After inspecting relevant documents and the claimed product the Distributor / Dealer will:
 - a) acknowledge the Warranty claim as warrantable and settle the claim on spot; in case it is not possible to settle the acknowledged claim on spot, they will accept the Product into Warranty procedure during which the acknowledged claim will be settled without unnecessary delay. The Distributor / Dealer will issue a written document certifying the acceptance of the Product from the Customer and both parties will confirm it by their signatures; or
 - b) reject the Warranty claim as unwarrantable and together with the Customer they will agree on further steps, or
 - c) accept the claimed Product for a professional assessment based on which the warranty claim will either be acknowledged and consequently settled without unnecessary delay, or rejected. The Distributor / Dealer will issue a written document certifying the acceptance of the Product from the Customer and both parties will confirm it by their signatures. The Distributor / Dealer will inform the Customer about the result of the assessment (acknowledgement or rejection of the Warranty claim) in a previously agreed manner (in writing or by one of long-distance communication devices).